1918
MAR
MICH

THE BUILDER

A RECORD OF ARCHITECTURE & CONSTRUCTION

VOLUME CXIV. No. 3923.
Seventy-sixth Year.
Telephone: Regent 5940-1.

FRIDAY, APRIL 12, 1918.
REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER.

PRICE SIXPENCE.
By Post, 6½d. (This Week.)
Telegrams: The Builder, London.

BOYLE'S
LATEST PATENT
"AIR-PUMP" VENTILATOR
Has double the extracting power of earlier forms and is one-half the price.
ROBERT BOYLE & SON,
64, HOLBORN VIADUCT, LONDON, E.C.1.

A PRACTICAL PENSION POLICY
FOR WOMEN WORKERS.
"After the heat and turmoil of the day,
The sheltered haven of the peaceful years."
A leaflet entitled
"After—"
giving full particulars of a new and attractive scheme will be sent post free on application to the
NATIONAL PROVIDENT INSTITUTION,
48 Gracechurch Street, London, E.C.3.

AUTOMATIC EJECTORS.
LONDON HYDRAULIC POWER CO.
HATFIELD STREET, S.E.1
Illustrated Pamphlet sent on application.

WAYGOOD-OTIS LIFTS.
PASSENGER. FALMOUTH ROAD, S.E.1

HASKINS
"CITY 2985" (4 lines).
For Lifts, Shop-Fronts, Revolving Shutters, Sun Blinds, Iron Gates, Etc.
SAML. HASKINS & BROS., LTD., 30/34, OLD ST., E.C.1

SIMPLEX LEAD GLAZING
FOR ROOFS, SKYLIGHTS, and HORTICULTURAL WORK.
NO ZINC, IRON or PUTTY USED.
ANY QUANTITY SUPPLIED.
NO SPECIAL CONTRACT REQUIRED.
Over 2,000,000 sup. ft. in use.
Write for Particulars to
GROVER & CO., LIMITED,
Britannia Engineering Works, Carpenters Road, Stratford, E.15
FACTORIES AND GENERAL ENGINEERS.

EWART'S
"EMPEROR" SMOKE CURE
Cures Smoky Chimneys.
Catalogue on application.
EWART & SON, Ltd., Euston Rd., London.

ASTON CONSTRUCTION CO. LONDON, N. Ltd.
ASTON STEELWORK.
ASTON IRON STAIRCASES.
ASTON HOLLOW TILE FLOORS.
ASTON NORTH 1808 (3 lines).

STEVEN'S (A.P.S.) ESTD. 1845 LIFTS
A. & P. STEVEN (PROVANSIDE WORKS) GLASGOW.

"POILITE" ASBESTOS-CEMENT ROOFING TILES. BUILDING SHEETS.
Over 130,000,000 Square Feet have been supplied to the British Government for Army Hutments, Hospitals, Munition Factories, &c.,
and bears out in a remarkable manner the favourable opinions expressed regarding "POILITE" at the last Annual Meeting of the Architectural Association.
BELL'S UNITED ASBESTOS Co., Ltd., Southwark Street, S.E.1

"RELIANCE" BRAND
LEAD & BITUMEN DAMPCOURSE.
SAMPLES AND PRICES ON APPLICATION.
VULCANITE, LTD. LONDON: 113, Cannon St., E.C.4
BELFAST: Lagan vale.
MANCHESTER: Westinghouse Road, Trafford Park.

ASPHALTE.
THE SEYSSEL AND METALLIC LAVA ASPHALTE CO.
(Mr. G. F. GLENN), Offices: Moorgate Station Chambers, Moorfields, E.C.2.
ASPHALTE CONTRACTORS TO THE FORTH BRIDGE CO.
[See other Advt. last page of literary matter.

BATTISCOMBE & HARRIS, Ltd.
Phone: Mayfair 2280.
Telegrams: "Decorative, London."
ARCHITECTURAL DECORATORS,
47, New Cavendish Street, LONDON, W.1.

ELECTRIC LIGHTING INSTALLATIONS
for Factories, Public Buildings, Offices and Flats.
TREDEGARS LTD.
Electrical Engineers and Lighting Specialists
5 & 7, BROOK STREET, LONDON, W.1.
Telephone: MAYFAIR 1032, 1033. Telegrams: "TREDELECT, WESDO, LONDON."

Analysis of Advertisements.

For Alphabetical List of Firms appearing in this List and References to current Advertisements see page iii.

Architectural Decorators
Battiscombe & Harris, Ltd.

Art Metal Fittings—
Art Metal Construction Co.
Gibbons, Jas.

Asbestos Tiles & Sheets—
Bell's United Asbestos Co.
British Everite and Asbestilite Works, Ltd.
British Fibrocement Works.

Asphalte—
Engert & Rolfe, Ltd.
Hobman, A. C. W. & Co. Ltd.
Limmer Asphalte Paving Co.
Ragusa Asphalte Co. Ltd.
Seyssel & Metallic Lava Asphalte Co.
Val-de Travers Asphalte Co.
Vulcanite, Ltd.

Baths, &c.—
Carr, Chas. Ltd.
Gillett & Johnston

Bituminous Sheeting—
Callender, Geo. M. & Co. Ltd.
McNeill, F. & Co. Ltd.
Vulcanite, Ltd.

Blind Cords—
Anchor Brand

Blinds (Window, &c.)—
Bryden, John, & Sons
Francis, S. W. & Co. Ltd.
Haskins, S. & Bros.
Williams, G. A. & Son

Boilers—
Hartley & Sugden, Ltd.
Keith, J. & Blackman Co. Ltd
Kinnell & Co., Ltd., Chas. P.

Bricks—
Builders' Material Association
Burley, C. Ltd.
Dennis, Henry
Doulton & Co. Ltd.
Leeds Fireclay Co. Ltd.
Rufford & Co.
Smeed, Dean & Co. Ltd.

Brushes—
Builders' Material Association
Farmiloe, George & Sons, Ltd.
Fearless Brush Co. Ltd.
Nicholls & Clarke
Young & Marten, Ltd.

Builders' Brasswork—
Builders' Material Association
Farmiloe, George & Sons, Ltd.
Francis, S. W. & Co. Ltd.
Haskins, S. & Bros. Ltd.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Builders' Ironmongery—
Nicholls & Clarke
Young & Marten, Ltd.

Building Composition—
Callender, Geo. M. & Co. Ltd.

Castings—
Haywards, Ltd.
Kinnell & Co., Ltd., Chas. P.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Ceilings, Cornices—
Battiscombe & Harris, Ltd.

Cement, Lime, Plaster—
Associated Portland Cement Manufacturers (1900), Ltd.
British Portland Cement Manufacturers, Ltd.
Builders' Material Association
Burley, C. Ltd.
Greaves, Bull, & Lakin
Kaye & Co. Ltd.
Smeed, Dean & Co. Ltd.
Wouldham Cement Co. Ltd.

Cement Waterproofer—
Builders' Material Supply Association.
Kerner-Greenwood & Co. (Pudlo).

Chimney Cowls, &c.—
Ewart & Son, Ltd.
Farmiloe, George & Sons, Ltd.
Nicholls & Clarke, Ltd.
Young & Marten Ltd.

Chimney Pieces (Marble) &c.—
Battiscombe & Harris, Ltd.
Nicholls & Clarke, Ltd.
Sessions & Sons, Ltd.
Young & Marten, Ltd.

Chimney Shafts—
Chimneys Limited.
Furse, W. J.

Coatestone—
Coatestone Decoration Co.

Composition Flooring—
Turpin's Parquet Floor, Joinery, & Woodcarving Co.

Concrete (Reinforced)—
British Reinforced Concrete Engineering Co. Ltd.
Christiani & Nielsen
Expanded Metal Co. Ltd.
King, J. A. & Co.
Somerville, D. G. & Co., Ltd.

Concrete Piling—
Simplex Concrete Piles, Ltd.
Somerville, D. G. & Co., Ltd.

Contractors' Plant—
Builders' Material Association
Lewis & Lewis, Ltd.
Palmer's Travelling Cradle and Scaffold Co.
Parker, F. & Co.
Stephen & Carter, Ltd.

Cooking Apparatus—
Nicholls & Clarke, Ltd.
Potterton, T.
Summerscales, W. & Sons
Young & Marten, Ltd

Damp Proof Courses—
Callender, Geo. M. & Co. Ltd.
Damp-proofing, Limited
Engert & Rolfe, Ltd.
Hobman, A. C. W. & Co. Ltd.
Ironite Co. Ltd. (The)
Kerner-Greenwood & Co. (Pudlo)
McNeill, F. & Co. Ltd.
Ragusa Asphalte Co. Ltd.
Rogers, Welch, & Co. Ltd.
Seyssel and Metallic Lava Asphalte Co.
Vulcanite Ltd.

Doors (Iron, Steel, &c.)—
Dennison, Kett, & Co. Ltd.
Gibson, A. L. & Co.
Haywards, Ltd.
Hobbs, Hart, & Co. Ltd.
Lift and Hoist Co.

Door Hangers—
Nicholls & Clarke, Ltd.
Parker, Winder & Achurch
Young & Marten Ltd

Door Springs and Hinges—
Nicholls & Clarke, Ltd.
Young & Marten, Ltd

Electric Hammer Drill—
Canadian-American Machinery Co., Ltd.

Electric Lamps—
British Thomson-Houston Co Ltd.

Electric Light Fittings—
Battiscombe & Harris, Ltd.
Tredegars, Ltd.

Electric Lighting—
Tredegars, Ltd.

Electric Motors—
British Thomson-Houston Co. Ltd.
Mather & Platt, Ltd.

Electricity—
British Thomson-Houston Co. Ltd.
Croggon & Co. Ltd.
Malcolm & Allan, Ltd.
Mather & Platt, Ltd.
Tredegars, Ltd

Endless Cords for Fanlight Openers—
Anchor Brand

Engines, Mortar Mills—
Lewis & Lewis, Ltd.

Facias, &c.—
Farmiloe, George & Sons, Ltd
Francis, S. W. & Co. Ltd.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Felt—
Anderson, D. & Son, Ltd.
Engert & Rolfe, Ltd.
Gibson, Arthur L.
McNeill, F. & Co. Ltd.

Fencing (Wood, &c.)—
Rowland Bros.

Fiberlic Board—
MacAndrews & Forbes, Ltd. (Fiberlic)

Fire Cements—
Builders' Material Supply Association

Fire Escapes, Staircases—
Clark, Hunt, & Co. Ltd.
Davis, H. & C. & Co. Ltd.
Haywards, Ltd.
Lift and Hoist Co.

Fire Protection Equipment—
Art Metal Construction Co.
Mather & Platt, Ltd.

Fire Resisting Glazing—
British Luxfer Prism Synd., Ltd.
Haywards, Ltd.
King, J. A. & Co.

Fireproof Flooring, &c.—
Bell's United Asbestos Co.
British Reinforced Concrete Engineering Co., Ltd.
Dawnay, A. D. & Sons, Ltd.
Expanded Metal Co. Ltd.
Haywards, Ltd.
Ironite Co. Ltd.
King, J. A. & Co.
Kleine Pat. Flooring Co. Ltd.

Flint Paper—
Oakey, J. & Sons, Ltd.

Floor Hardener—
Trus-Con Laboratories

Flooring and Paving—
Acme Paving and Flooring Co. (1904), Ltd.
Bell's United Asbestos Co.
Ironite Co. Ltd.
Stevens & Adam
Turpin's Parquet Floor, Joinery, & Woodcarving Co
Zeta Wood Flooring Co.

Folding Partitions—
Lift and Hoist Co.

Garden Hose—
Wilcox, W. H. & Co. Ltd.

Gates (Collapsible)—
Dennison, Kett, & Co. Ltd.
Haywards, Ltd.
Lift and Hoist Co.

Gates, Railings (Iron), &c.—
Bayliss, Jones & Bayliss, Ltd.
Haywards, Ltd.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Glass (Plate & Window)—
British Luxfer Prism Synd. Ltd.
Clark J. & Son, Ltd.
Farmiloe, George & Sons, Ltd.
Haywards, Ltd.
Jennings, C. & Co. Ltd.
King, J. A. & Co.
Newton, J. M. & Sons, Ltd.
Nicholls & Clarke
Young & Marten, Ltd.

Glass Paper, Diamonds, Emery Wheels—
Oakey J. & Sons, Ltd.

Glass (Stained, Painted)—
British Luxfer Synd., Ltd.
Clark, J. & Son
Farmiloe, George & Sons, Ltd.
Haywards, Ltd.
King, J. A. & Co.
Newton, J. M. & Sons, Ltd.
Nicholls & Clarke
Young & Marten Ltd.

Glazing—
Braby, F. & Co. Ltd.
British Luxfer Synd., Ltd.
Farmiloe, George & Sons, Ltd.
Ferro-Stone Glazing Co. Ltd.
Fresman's
Grover & Co. Ltd.
Haywards, Ltd.
Hollwell & Co. Ltd.
King, J. A. & Co.
Lorden, W. H. & Son, Ltd.
Newton, J. M. & Sons, Ltd.
Nicholls & Clarke, Ltd.
Partridge, T. & Co.
Young & Marten, Ltd.

Glue (Liquid)—
Improved Liquid Glues Co.

Glue (Powder)—
Central Chemicals Ltd.

Gutter Brackets—
Parker, Winder & Achurch

Heating and Lighting—
British Commercial Gas Association
Clark, Hunt, & Co Ltd.
Davis Gas Stove Co.
Ewart & Son, Ltd.
Hartley & Sugden, Ltd.
Haywards, Ltd.
Keith, J. & Blackman Co. Ltd.
King, J. A. & Co.
Kinnell, Chas. P. & Co., Ltd.
Messenger & Co.
Musgrave & Co.
Nicholls & Clarke, Ltd.
Potterton, T.
Tredegars, Ltd.
Young & Marten, Ltd.

Horticultural Buildings—
Messenger & Co.

Hydraulic Power—
London Hydraulic Power Co.

Industrial Motor Vehicles
"Motor Traction"

Insurance—
London and Lancashire Fire Insurance Co. Ltd.
Norwich Union

Ironite—
Ironite Co. Ltd.

Joinery, Mouldings, &c.—
Battiscombe & Harris, Ltd.
Bryce, White, & Co.
Bullen Bros. & Sons, Ltd.
Jennings, C. & Co. Ltd.
Ogilvie & Co.
Orfeur, C. H. Ltd.
Semlons & Sons, Ltd.
Tucker, W. Duncan, & Sons
Turpin's Parquet Floor, Joinery, & Woodcarving Co.

Ladders—
Builders' Material Association
Parker & Co.
Stephens & Carter

Laundry Appliances—
Bradford, T. & Co. Ltd.
Summerscales, Ltd.

Lead, Oil, Colours, Size, &c.
Builders' Material Association
Farmiloe, G. & Sons, Ltd.
Girdler, J. & Co.
Nicholls & Clarke
Young & Marten, Ltd.

Letters, &c.—
Francis, S. W. & Co. Ltd.

Lifts, Hoists, Cranes &c.—
Bryden, John, & Sons
Dennison, Kett, & Co. Ltd.
Haskins, S. & Bros. Ltd.
Lewis & Lewis, Ltd.
Lift and Hoist Co.
Waygood-Otis, Ltd.

Lightning Conductors—
Croggon & Co. Ltd.
Furse, W. J.

Lithography—
Allday, Ltd.

Locks, Latches, and Furniture—
Hobbs, Hart & Co. Ltd
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Marble—
Moore, M. & R.

Metal Casements—
British Luxfer Syndicate, Ltd.
Crittall Manufacturing Co., Ltd.
Farmiloe, George & Sons, Ltd.
Haywards, Ltd.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Mill Mortar—
Builders' Material Association

Mosaic Work—
Maw & Co. Ltd.
Moore, M. & R.
Stevens & Adams
Turpin's Parquet Floor, Joinery, and Woodcarving Co.

Mouldings—
Jennings, C. & Co. Ltd.
Tucker, W. Duncan & Sons

Paints, Stains, Varnish—
Builders' Material Association
Cuxson Compositions Co. Ltd.
Farmiloe, George & Sons, Ltd.
Farmiloe, T. & W. Ltd.
Nicholls & Clarke
Stephens, H. C.
Young & Marten, Ltd.

Parquet Flooring—
Anglo (All British) Parquet Co.
Bassant, H. & Co.
Cambridge Wood Block and Parquetry Co. Ltd.
Damman & Co.
Stevens & Adams
Turpin's Parquet Floor Joinery, and Woodcarving Co.

Partitions, Slabs, &c.—
British Uralite Co. (1909)
Builders' Material Association
Educational Supply Co. Ltd.
Expanded Metal Co. Ltd.
Jones, Fredk. & Co. Ltd.
King, J. A. & Co.
MacAndrews & Forbes, Ltd. (Fiberlic)
Muribloc (Partition Slabs), Ltd

Pavement, &c., Lights—
British Luxfer Prism Synd., Ltd.
Haywards, Ltd.
King, J. A. & Co.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Picture Cords—
Anchor Brand

Plaster Work—
Battiscombe & Harris, Ltd.

Pumps, Pumping Engines
Braby, F. & Co. Ltd.
Farmiloe, George & Sons, Ltd.
Mather & Platt, Ltd.
Nicholls & Clarke, Ltd.
Phœnix Engineering Co. Ltd.
Pulsometer Engineering Co.
Wilcox, W. H. & Co. Ltd.

Rain-Water Heads and Pipes—
Builders' Material Association
Farmiloe, George & Sons, Ltd.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Roofing (Felt)—
Anderson, D. & Son, Ltd.
British Roofing Co., Ltd.
McNeill, F. & Co. Ltd.
Seyssel and Metallic Lava Asphalte Co.

Roofing (Rok)—
Anderson, D. & Son

Roofing (Ruberoid)—
Ruberoid Co. Ltd. (The)

Roofing (Vulcanite)—
Vulcanite, Ltd.

Rooflights—
Braby, F. & Co. Ltd.
British Luxfer Prism Synd., Ltd.
Messenger Bros. Ltd.

Roof Repairing Compound
Farmiloe, T. & W. Ltd.

Roofs (Zinc and Copper)—
Braby, F. & Co. Ltd.
Ewart & Son, Ltd.

Roofs and Buildings (Iron and Steel)—
Croggon & Co. Ltd.
Haywards, Ltd.
Shaw, M. T. & Co. Ltd.

Safes—
Hobbs, Hart, & Co. Ltd.
Tann, John, Ltd.

Sanitary Appliances and Ware—
Andrew & Hanson
Builders' Material Association
Burn Bros.
Dennis, Henry
Doulton & Co. Ltd.
Emanuel, A. & Sons, Ltd.
Farmiloe, George & Sons, Ltd.
Haywards, Ltd.
Leeds Fireclay Co. Ltd.
Nicholls & Clarke
Rufford & Co.
Sessions & Sons, Ltd.
Young & Marten, Ltd.

Sash Lines, Cords, &c.—
Anchor Brand

Scaffolding—
Builders' Material Association
Humphries Patent Bracket and Scaffold Syndicate, Ltd.
Palmer's Travelling Cradle and Scaffold Co.
Parker, F. & Co.
Patent Rapid Scaffold Tie Co.
Stephens & Carter

Shop Fronts (Metal & Wood)
Francis, S. W. & Co. Ltd.
Haskins, S. & Bros. Ltd.

Shutters—
Dennison, Kett, & Co.
Francis, S. W. & Co. Ltd.
Gibson, Arthur L.
Haskins, S. & Bros. Ltd.
Lift & Hoist Co.

Signs—
Francis, S. W. & Co. Ltd.

Silicate Cotton—
Jones, F. & Co. Ltd.
McNeill, F. & Co. Ltd.

Slag Wool—
Jones, Fredk. & Co. Ltd.
McNeill, F. & Co. Ltd.

Slates—
Builders' Material Association
Etridge, J. J. Junr.
Sessions & Sons, Ltd.

Slating and Tiling—
Etridge, J. J. Junr.

Sprinklers (Automatic)—
Mather & Platt, Ltd.

Stable, &c., Fittings—
Haywards, Ltd.
Musgrave & Co. Ltd.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Stair Treads—
Safety Tread Syndicate, Ltd.

Staircases, Verandahs, &c
Art Metal Construction, Ltd.
Aston Construction Co.
Carron Company
Davis, H. & C. & Co.
Haywards, Ltd.
Lift & Hoist Co.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Steam Cleaning—
Steam Cleaning Corporation

Steel Fittings—
Art Metal Construction Co.
Crittall Steel Furniture Co., Ltd.
Gibbons, Jas.
Sankey, J. & Sons, Ltd.

Stone—
Bath and Portland Stone Firms, Ltd.
Pawson Bros. Ltd.

Stone Preservative—
Bath and Portland Stone Firms, Ltd.
Stone Preservation Co.

Storage Bins (Steel)—
Gibbons, James
Sankey, J. & Sons

Stoves, Ranges, Mantels—
Candy & Co. Ltd.
Carron Company
Clark, Hunt & Co., Ltd.
Interoven Stove Co. Ltd.
Nicholls & Clarke, Ltd.
Sessions, J. & Sons
Musgrave & Co.
Nautilus Fire Co., Ltd.
Young & Marten, Ltd.

Strong Rooms—
Hobbs, Hart, & Co Ltd.
Tann, John, Ltd.

Structural Iron and Steel
Aston Construction Co.
Clark, Hunt, & Co. Ltd.
Davis, H. & C. & Co
Dawnay, A. D. & Sons, Ltd.
Freeman's
Haywards, Ltd.
Henderson & Glass
Lift and Hoist Co.
Shaw, M. T. & Co.

Surveying Instruments—
Clarkson's

Tanks, Cisterns, &c.
Braby, F. & Co.
Builders' Material Association
Croggon & Co. Ltd.
Damp-proofing, Limited.
Farmiloe, George & Sons, Ltd.
London Galvanized Iron Co.
Mather & Platt, Ltd.
Nicholls & Clarke, Ltd.
Shaw, M. T. & Co.
Young & Marten, Ltd.

Tar Boilers—
Phœnix Engineering Co. Ltd.

Terra Cotta—
Dennis, Henry
Leeds Fireclay Co. Ltd.
Thompson (Jabez) & Sons, Ltd.

Tiles—
Dennis, Henry
Leeds Fireclay Co. Ltd.
Maw & Co., Ltd.
Minton, Hollins, & Co. Ltd.

Timber—
Bryce, White, & Co.
Gilkseten, J. & Son, Ltd.
Jennings, C. & Co. Ltd.
Priday, Sydney (Oak)
Sessions & Sons, Ltd.
Young & Marten, Ltd.

Tyres—
Dunlop Rubber Co.
North British Rubber Co. Ltd

Underlining, &c.—
Engert & Rolfe Ltd.
McNeill, F. & Co. Ltd.
Vulcanite, Ltd.

Ventilating—
Keith, J. & Blackman Co.
Doyle, R. & Son
Clark, J. & Son
Ewart & Son, Ltd.
Haywards, Ltd.
Kinnell, Chas. P. & Co., Ltd.

Wall & Ceiling Covering
MacAndrews & Forbes, Ltd (Fiberlic)
Nicholls & Clarke
Thames Paper Co.
Young & Marten, Ltd.

Water Bars—
Clark Hunt, & Co. Ltd.

Water Heaters—
Ewart & Son, Ltd.
Potterton T.

Waterproofing—
Callender, G. M. & Co. Ltd.
Damp-proofing, Limited.
Ironite Co. Ltd.
Kerner - Greenwood & Co. (Pudlo)
Rogers, Welch, & Co. Ltd.
Trus-Con Laboratories
Vulcanite Ltd.

Water Towers—
Chimneys, Ltd.

Window Frames & Sashes
Braby, F. & Co. Ltd.
Brunswick Engineering Co.
Carron Company
Clark, Hunt, & Co. Ltd.
Hayward Bros. & Eckstein
Young & Marten, Ltd.

Window Guards—
Lift and Hoist Co.

Wine Bins (Iron)—
Farrow & Jackson

Wire Screens—
Parker, Winder & Achurch

Wiring—
Tredegars, Ltd.

Wire Rope—
Palmer's Travelling Cradles Co.

Wood Flooring—
Acme Flooring and Paving Co. (1904) Ltd.
Anglo (All British) Parquet Co.
Bassant, H. & Co.
Jennings, C. & Co.
Stevens & Adams
Turpin's Parquet Floor, Joinery, and Woodcarving Co.
Zeta Wood Flooring Co.

Wood Working Machinery
Lewis & Lewis Ltd.

BATTISCOMBE & HARRIS, LTD.

ARCHITECTURAL DECORATORS.

CHIMNEY PIECES - CEILINGS - CORNICES.

Plaster Work of Every Description.

47 NEW CAVENDISH STREET, LONDON, W. 1.

'Phone: Mayfair 2869. Telegrams: "Decorative, London."

B&H ESTABLISHED 1847

THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

VOL. CXIV.—No. 3923. APRIL 12, 1918.

THE IDOL OF THE DRAWING-BOARD.

NO doubt there is still a race of scholars who honour the memory and writings of Francis Bacon by other means than identifying him with William Shakespeare. It is pleasing to imagine that the tenants of Gray's Inn, so many of whom are architects, are among this band, and to suppose that a fair number of those who look down from their windows on the bronze counterfeit of their great man have upon their bookshelves copies of the Novum Organum. If this is so, they will remember Bacon's doctrine of the false conventions (*idola* or *idols* he calls them, meaning false systems, rather than false gods), by which the general science of mankind is misled. This doctrine is one that has its application in the world of architecture, and we should not be far wrong in naming as one of the evil genii of the art, a pitfall, a snare, what might be called, in Bacon's sense of the word, the "idol" of the drawing-board. Any architect with a conscience will understand what we mean—for he has had to struggle against it. We do not refer merely to the fact that a design is sometimes falsely tricked out to look more attractive in the drawings than it ever looks in execution, but to a subtler and more insidious relationship between the thing drawn and the thing constructed.

The whole mystery and secret is, to put it briefly, that even when perfect truth is observed between drawings and building, the highest (apparent) success in design is not necessarily won in both spheres. If, in trying to put this into other words, we simply say that a good elevation and plan do not always make a good building, we shall have reduced the matter to a platitude, and somewhat missed the point. We all know that some producers of excellent buildings have been unattractive as draughtsmen, and, *au contraire*, that attractive workers on paper sometimes fail to achieve structural successes; but the mischief we refer to is not quite so easily expressed or detected as the mere inequality between the promise of the drawing and the performance of the builder. Bacon's word, *idolon*, which, no doubt, means a false ideal, very nearly fits the case. Probably the very best illustration of the workings of this *idolon* is to be found in the plans of the eighteenth century architects. We all know with what exquisite skill the men of the Adam school obtained an almost tuneful rhythm and balance in the disposition of their plans. It is probably a fact that walls which only needed to be thin partitions were sometimes thickened to keep up the apparent equipoise of the plan on paper.

Fit a circular boudoir into a space between square rooms and you get heavy spandrils of solid walling which overweight the pattern of the plan like semibreves among the quavers of a Handelian scherzo. But if you scoop niches out of those solid masses the relation of brickwork to open space is at once restored to the plan-picture, features of grace have been added, and, as it seems, economy of material—a real element of beauty—has been achieved. But is this device anything more than a homage to the drawing itself? A moment's thought will show that a niche 2 ft. 6 in. wide is not likely to rise to the full height of a 15 or 16 ft. wall; so that it is merely at the accidental level through which the plan is taken that all this grace and balance is obtained. The real building does not share the full melody of the plan, and if it did no one would be the wiser. A similar action of the *idolon* is traced wherever the plan shows efforts at the retention of centre lines or the observance of repetitive balance not discernible in the executed work.

One has, after all, an honest kind of sympathy for these folk who so innocently mistake the means for an end in itself. The business of human civilized life is conducted departmentally by groups of specialised workers—traders, artists, manufacturers—who, each in their little sphere, aim at the supreme production of some output which is to the makers an end in itself, but which becomes to its purchasers the means to some other end. These creators take pride in their creations—and without that proper pride which sees in the goal of each occupation the glory of finality, there would be in the world an insufficiency of the enthusiasm which oils the wheels of life and makes the human machine revolve. All this, of course, is a doctrine that was set forth by the Greeks.

It is a sort of accident of the architect's career and work that he is concerned in producing both drawings, which are means, and houses, which are ends. What wonder, then, if in the pleasure of the intermediate or drawing process, he is sometimes tempted to glorify his draughtsman-craft into the finality of an end—an aim? The reasoning that does so is false, no doubt; but the pleasure that comes from work with an end in view has a reactive force; and the work which is done with pleasure tends to magnify its product into an end, whether it really is an end or only the means to something else. The true end with the architect is, of course, the house or whatever other concrete embodiment is to be the ultimate product of his brain and of his intermediate paper work.

Oddly enough, this particular class of false effect is more often detected in a garden scheme than in a house design. Time and again symmetries, balances and centralities have been achieved in landscape architecture, which none but a bird or an aviator could ever appreciate or (without the contract drawing) discover. These things were the work of the idol of the drawing board. It is amusing to study a garden which has been misconceived on these lines, and to trace in the bewildering facts actually accomplished the lost glories of that original double-elephant sheet. Yonder paved walk that sidles so uncomfortably past the roots of a giant oak has the virtue of being dead central with the front door. The great tree itself, which the lady of the house would not sacrifice, was doubtless balanced on the plan by that tub of tulips; and there at the end of the walk, defying by its modern glare the laboured antiquity of the "random" footway, is the conservatory whose allegiance to the centre line, so honourable on the plan, becomes an insult in actual being. On the other side of the house, centre lines again hold sway. The sundial, loyal to the terrace, has a fierce altercation with the loggia, and the loggia was out for a centre line of its own.

But "never mind," said the double-elephant to the compasses and the straight-edge, "let us get on with the south lawn." So off they went to the open field that was to be combed and banked into tennis patch, orchard, and rock garden. The tennis ground, brave in its unwavering level, made, it is to be feared, sad havoc on account of the dip at one end and the lump at the other by which it countered nature's original slope, but the shrub-man came to the rescue; and the straight-edge careered away up hill and then down again with a centre line which no human eye but its creator's has ever rediscovered. The "lily-pond" to which it hurries, as to a target, is invisible from the house; and even if the owner had risen to supplying the Triton indicated on the plan, that Triton's head, seen as if lying on the tennis lawn (and neatly bisected by the end elevation of the net), would be all that the proprietor would catch a glimpse of from the drawing-room window. That window, sad to relate, being of an even, instead of an odd, number of lights, would require to have a mullion removed for the purposes of this observation.

And what is that ghost-noise that haunts the garden at nights? It is not the horn of the unbought Triton, but the mocking laughter of the Idol of the Drawing-board.

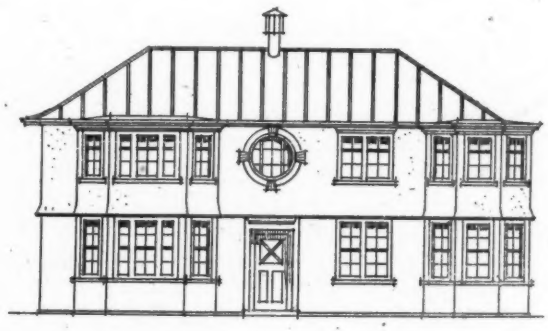
NOTES.

More Housing Competitions. THE Welsh Housing and Development Association have organised a competition to be held under the auspices of the National Eisteddfod, to be held at Neath. We are told that funds have been generously placed at the disposal of the Association for this purpose, the said funds being as follows :—A premium of £50 is offered for the best design in each of three classes of types of cottages suitable for agricultural labourers in Wales. This, though not erring on the side of generosity for type designs to be repeated, is possibly adequate ; but what can be said of Lady Boston's offer of £10 for the best design for "living-in quarters" for agricultural labourers ; or the princely offer of £5 5s. for the best design for the lay-out of a local building area on town-planning lines ? It is about time that these very busy philanthropists should realise that the services of an architect of ability cannot be obtained at a rate which would not attract a good artisan. We have had too many competitions in the past, with the result that many people look on the architect as a man whose brains can be picked at the cost of a few guineas. Perhaps another lady would offer a couple of fowls as a prize for the best design in a really important competition, the prize being handed over on receipt of the necessary number of meat coupons. We might add that foreigners and alien enemies are not qualified to share in the rewards which the generosity of the wealthy and philanthropic place at the disposal of the Welsh Housing and Development Association. While we pity the alien, we advise all architects to eschew the competitions.

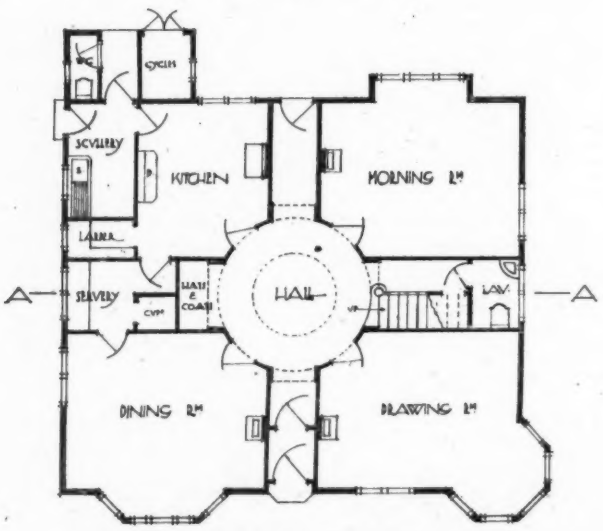
Reims, Amiens and Cologne. Now that Amiens Cathedral is practically within range of the big German guns, it would seem policy to intimate to the German authorities in the most unmistakable way that any destruction done to Amiens will be repaid by a direct attempt to inflict similar damage on Cologne Cathedral. If the Germans have sentiment for any buildings, it is for their own—and of their own there is nothing which appeals to them so much as Cologne Cathedral. With the lesson of German vandalism in connection with Reims, Arras, Noyon and other of the great French architectural monuments in mind, we may be sure that nothing but the fear of retaliation will influence the German high command, and the fact of being held up by the Allies will probably only make the Germans more anxious to destroy another great monument of French art from a distance. We should be sorry to hear of the destruction of any great building, whether in Germany or elsewhere ; but if the threat to destroy Cologne would be a means of saving Amiens, it would be amply justified. We none of us like reprisals, but what is still worse is the fact that offences should be committed which can alone be checked by the certainty that reprisals will follow.

Architects' Benevolent Society. MR. ERNEST NEWTON, in his speech at the recent annual meeting of the Architects' Benevolent Society, referred to the appeal for funds which he made on behalf of the Architects' War Committee. He stated that over £800 had been received, and that he hoped the sum of £1,000 would be reached before the end of April. "I feel convinced," Mr. Newton said, "that members of our profession, and there are many to whom the war has brought much work, only require to know our need to respond to it." We cordially share in the late President's conviction. As, however, reports of speeches sometimes escape the attention of those to whom they are mainly addressed, we take this opportunity of again reminding members of the architectural profession to whom the war has brought work that the privilege remains to them of supporting the War Committee's appeal. We understand that only £150 is now required to attain the desired sum, and we have no doubt that it will be speedily forthcoming from those who have not contributed.

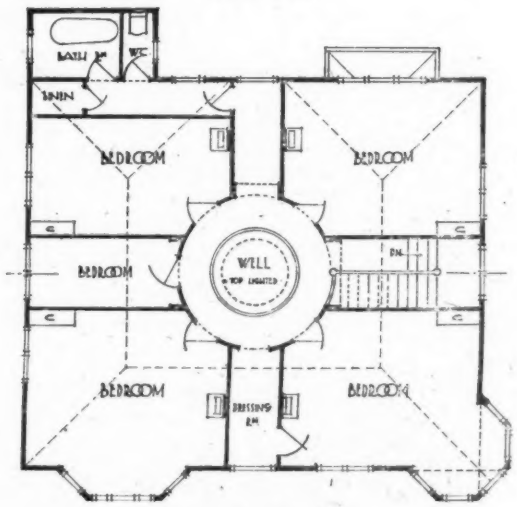
SECTION A-A



ELEVATION



GROUND FLOOR PLAN



1ST FLOOR PLAN

Design for a Centrally Heated House. By Mr. JOHN MURRAY, F.R.I.B.A. (See next page.)

SCIENTIFIC HOUSES AND COTTAGES.

WE have received the following letter from Mr. John Murray, F.R.I.B.A. The bungalow design referred to is given as an inset illustration :—

SIR,—With reference to your leading article in the *Builder* of March 29 and to your suggestion of the possibility of building cottages upon new and more scientific principles, with which I entirely agree, I venture to submit the following views upon this important question :—

In the year 1915, owing to a desire for economical building, I designed for a country estate a bungalow and a small two-story house, the erection of which has been deferred owing to the war.

Perhaps some of the scientific principles of the designs might with advantage to the public be adapted to future urban and rural cottages. I therefore transmit to you a few drawings of the designs, in case you may deem them worthy of illustration in your journal. The scientific principles that the designs embrace include, *inter alia* :—

A combination of steel, reinforced concrete, and ordinary building construction, the life of which would be, in my opinion, probably about a century, if the external roof covering were once renewed during that period.

A minimum of material, labour and cost, with a maximum of necessary strength, cubic capacity, and speed in erection.

No large spaces enclosed in the thickness of the floors or roofs that harbour dust, and no paper or paste on the walls or ceilings, which are liable to serve as food for microbes.

Thin external walls, about 4 to 6 in. thick, built with standardized, grooved, waterproofed, cement concrete blocks, reinforced with vertical steel rods, with some steel stanchions to the two-story house and with horizontal wire ties laid in the grooves of the concrete blocks bedded in the cement joints and fixed to the rods and stanchions.

The walls externally faced with waterproofed cement rough cast, varied by any suitable facing or ornament cast on the blocks, or by applied woodwork, paint, or limewhite.

The walls and partitions internally covered with one coat of asbestos or other hygienic cement plaster decorated with sanitary distemper.

Picture rails, cupboards and fittings fixed to small plugs driven into the joints between the concrete blocks.

Small foundation blocks, as the buildings would be lightly but strongly constructed and sufficiently rigid to stand the necessary wind and snow pressure.

Asphalt damp course in the sunk groove of the foundation blocks and carried up on face of the external walls a few inches above the ground line.

The floors of thin, solid, reinforced concrete and all floors with rounded angles next walls and partitions.

Staircase of thin reinforced concrete slabs built up and supported by steel brackets.

Roofs of light steel ribs about 2 ft. to 3 ft. apart covered externally with asbestos or other suitable roofing sheets with rolls at the intersections all in red, green or other approved colour. The underside of roofs largely used to form the ceilings of the rooms covered with building board fixed loosely into rebates or grooves and removable to give access for painting the steel ribs.

An inlet ventilator over each room door and an outlet ventilator from the ceiling level carried into the outlet ventilating flue from each room.

All joinery of standardized dimensions, machine-made from natural wood or from wood pulp moulded and compressed, finished with one coat of stain of any selected colour and with an enamelled surface.

No basement, and where urban sites have had buildings with basements formerly built upon them, the new supporting steel stanchions could be carried down to the old basement level to obtain a solid foundation, and the stanchions tied together at the ground floor level of the new houses.

No chimney breasts, no coal fires, no smoke flues, no chimney stacks, no chimney pots, no coal cellars; but in lieu thereof, in each room an electric or gas fire, or an electric or gas portable radiator, and in each kitchen an electric or gas cooking stove with a metal hood over connected to an outlet ventilating flue.

A small outlet ventilating flue in each room and kitchen formed in concrete or terra-cotta blocks built in a wall or partition carried up from the electric or gas stove or fire, and surmounted by a metal cowl fixed above the roof.

Practically all the heat generated by the electric or gas stoves, fires and radiators, to be utilized internally, including the radiated heat from the faces of the outlet ventilating flues.

Gas can now be provided and burnt in approved stoves, so that no fumes whatever enter the rooms, the air in which remains free from any contamination by the gas.

The electricity and gas used for cooking, heating and lighting to be supplied from large central works. It is not proposed to use gas for lighting.

Cold water supplied from a storage cistern that could be fixed in the bathroom, kitchen or scullery.

Hot water supplied by means of a small and economical electric or gas hot water circulator fixed near the cooking stove in kitchen and conveyed by pipes to taps over a sink in the kitchen or scullery, over the bath and a lavatory basin in bathroom, also on a landing of each upper story.

A small electric or gas enclosed refuse destructor fixed near the cooking stove in kitchen.

All repairs could be easily and economically executed.

Buildings erected on these lines would be dry, hygienic, sufficiently warm in winter and cool in summer, largely fireproof, and they should command a specially low fire insurance premium.

All the space within the external enclosures would be utilized to the fullest extent.

There need be but little wood used, practically only the amount required for doors and windows. Wood will probably be scarce in this country for some years after the war and a good substitute may be essential.

Most existing urban by-laws and some rural by-laws and building regulations would require remodelling in order to permit the erection of these designs, and I venture to suggest that this question might with advantage be fully considered now.

The cost is difficult to estimate correctly at the present time owing to the uncertainty of post-war conditions, but, in my opinion, it would probably be about 33 per cent. less than the usual type of building as now required to accord with existing urban building by-laws.

The principal features of this type of building are the centralisation of the supplies of heat and light, the elimination of all coal and fuel from the buildings, the consequent great economy and cleanliness, whilst the saving of domestic labour would be very great.

The most satisfactory heat and light appears to be obtainable by electricity, which I am of opinion could be generated at so low a cost as to render it suitable for heating and lighting the smallest group of cottage building.

It should be remembered that it was possible before the war to generate electric current from a comparatively small single private house installation at a cost of about 1½d. per unit, including the cost of installation, and this figure could probably be reduced if it were produced and used in greater bulk in the future from large or even comparatively small installations.

Gas could be used for cooking, but the advantages and cheapness of electricity may ere long prove to be at least equally advantageous for this purpose.

Heating small buildings by large central, or small separate, systems of ducts and pipes conveying hot air, steam, or hot water, does not appear to be sufficiently practical, economical, or cleanly in distribution. The same objections apply to any large central distribution of hot water to a large number of separate houses.

Although coal would be required to produce electricity and gas, the extension and centralisation of their manufacture, in order to supply a large number of houses, would assist materially in smoke abatement, effect a great saving in coal consumption and cost of distribution, the necessity for which may, before many years, become a pressing problem in this country.

The consideration of the present housing problem would appear to afford a suitable opportunity to consider, also, this large and important coal saving question in relation to the future housing problem, with which it is intimately connected.

Even in cottages comfort is essential, and the cubic capacity of rooms would not, I think, be best suited for the public if it were reduced to a hygienic minimum. This is chiefly advocated from a desire to reach a minimum of cost, but I think that essential could be sufficiently attained by more scientific and economical construction on the lines that I have ventured to suggest, without necessitating an absolute minimum of cubic capacity or preventing the acquirement of satisfactory economic rents.

The proposal to build a large number of cottages needs the widest outlook, requires all available scientific aids, suggests a great extension of scientific principles as applied to building, and seems to afford an unique opportunity for the fullest consideration of the extension and centralisation of the supplies of heat and light, so that they can be transmitted economically to small houses and cottages, which, if accomplished, would confer great benefits upon the community in the future.

Numerous healthy buildings, including dwelling houses, exist now, where practically all heating and lighting are provided satisfactorily by gas and electricity, supplied from large central sources, and I think that this system could, with much advantage and economy, be extended universally to dwelling houses, including the smallest cottages. There can be little doubt that electricity and gas for heating and cooking are growing rapidly in public favour.

The attainment of private enterprise to assist the problem could probably be best accomplished on the sound financial lines suggested by Mr. Edward Gibbs, to which he has again referred in his letter that appeared in the *Builder* of March 29.

I am of opinion that a great evolution of scientific building is possible, if undertaken in a thoroughly comprehensive manner, and that such a development would prove to be within sound economic limits.

I think that on some such lines as these the small house and cottage problems might be most satisfactorily solved. JOHN MURRAY.

Leith Hill Woods.

The beautiful woods of Leith Hill, which have been the subject of correspondence in *The Times* by writers apprehensive of their destruction, are to be preserved. At the Timber Supplies Department a few days ago a representative of *The Times* was informed that the trees of only a relatively small area on Abinger Common, two miles or more from the tower on Leith Hill, are to be felled. The intention attributed to the Department of practically stripping the hill bare, was founded, it was said, entirely on a misapprehension. The fine stretch of woods from the tower to the charming hamlet of Friday-street is to be left intact. At Abinger Common there are some Scotch firs so fully matured that their period of decay is about to set in, and it is felt by the Department that it would be a pity to allow such timber, of which there is at present a great scarcity, to go to waste when by felling them now they can be used to such good purpose for the nation. Local feeling is said to be quite satisfied with the decision of the Department.

GENERAL NEWS.

The Royal Institute of British Architects.

We are asked to announce that the informal conference with engineers on "The Relations of Architecture and Engineering," which had been arranged to be held at the Institute on April 17, has been postponed.

Drawings by the Late Captain Gascoyne.

Some drawings by the late Captain Charles Gascoyne will be on exhibition at No. 35, Bedford-square, W.C., from April 15 to 30. Any members of the Architectural Association who have suitable drawings for exhibition, executed by Captain Gascoyne, which they are willing to lend, are requested to communicate with Mr. Robert Atkinson, who is arranging the exhibition, at the offices of the Association.

Water Supply for Road Traction.

In consequence of the increase in mechanical road traction over long distances, the Birmingham Water Committee has provided special means for obtaining supplies of water *en route*. Arrangements have been made to fix appliances for filling boilers from street hydrants at fourteen fire stations and seven police stations near main roads. These appliances may be used on the production of vouchers. The scheme is already in operation.

Bridge over the Clyde.

The Glasgow Institute of Architects are issuing to members of public bodies in the city a pamphlet written by Mr. T. L. Watson, F.R.I.B.A., advocating the construction of a fixed bridge over the Clyde at Lancefield Quay, with a headway of 75 ft. above high water level and having a practically level roadway of approach from Argyle-street at the foot of Elderslie-street on the north and from West Scotland-street on the south. This scheme has found favour with the Institute, and has been recommended by them to the Corporation.

National War Memorial.

We understand that Lord Crawford's committee, which was appointed to consider the question of a site and other matters in relation to the establishment of a National War Memorial, has now completed its report, which is under the consideration of a committee of the Cabinet. It is understood that the committee recommends that the memorial shall take the form of an Imperial War Museum, to be erected on the south side of the Thames near the County Hall. The approximate cost, exclusive of the site, is estimated at £600,000. It is felt that, for a great permanent memorial of the war, which would attract our kinsmen from oversea and our Allies for generations, the question of cost should not be too closely considered. The one essential is to ensure that the building to be erected shall be worthy of those whose sacrifices it is intended to commemorate.—*Times*.

The Development of Edinburgh.

The Lord Provost's Committee of Edinburgh Town Council recently considered a motion by Councillor Allan to consider the advisability of a comprehensive report being got on town-planning, housing of the industrial classes and development of industrial transit and city expansion in Edinburgh. Supporting his motion, Councillor Allan said he did not think they should approach all these problems piecemeal. At present, they were applying for Parliamentary powers to run a tramway to Queensferry, but he thought the better way would be for the city to consider its development as a whole, and then apply for comprehensive powers. Housing was naturally allied to industries, while the question of transit was involved both in housing and in industrial expansion. It was remitted to the Development Committee, with the addition of the Conveners of the Electric Lighting and Town Planning Committees, to report on the suggestion.

SUGGESTIONS FOR TREATMENT OF WAR MEMORIALS.

In response to requests for advice from various quarters, the Council of the Royal Academy have appointed a Committee to consider War Memorials, and the following suggestions are offered by this Committee to those who are considering such memorials:—

1. Designs should be obtained either by calling in a competent artist, or by competition; and in the event of a competition being held, whether open or limited, a professional artist should be employed as assessor, who should be consulted as to the site and the conditions of the competition.

2. The site of the memorial, especially if in the open, is of vital importance. Any odd place will not do, and advice should be taken as to the suitability of the site before designs are obtained. In large towns, for instance, a memorial should not be so placed as to obstruct traffic; on the other hand, it should occupy a position sufficiently conspicuous to be worthy of its object; and the value or disadvantage of existing buildings as a background should be considered in deciding its position.

3. Where the memorial is to take the form of sculpture or architecture, the question of material should be determined (*a*) by the amount of money available, *e.g.*, for bronze, marble, stone or wood; (*b*) by local considerations where these exist. If, for example, there is a suitable and durable local stone this should be used in preference to stone imported from a distance; and if such stone is used, due account must be taken of its qualities in the design.

4. In smaller towns or villages the setting of the memorial, the approaches to it, and its immediate surroundings should be carefully considered, and the cost of laying out the site, when necessary, should be included in the scheme. The effect of a memorial is often entirely destroyed by the want of a careful laying out of the site.

5. Where memorials are proposed for the interior of churches or public buildings, whether in sculpture, architecture, stained glass, mural paintings, votive pictures, tapestry Rolls of Honour, or wall tablets, careful regard should be paid to the scale and character of the architecture of the building and to any adjacent monument.

6. The lettering of all inscriptions should be carefully studied, and should be legible. A bold Roman type, or the Italian lettering of the sixteenth century based on it, is the type most suitable.

7. In all memorials simplicity, scale, and proportion should be aimed at rather than profusion of detail or excessive costliness of material. It is the imaginative and intellectual quality of the work that gives it its final value.

The Committee would be willing to give further advice in particular cases if called upon to do so. Enquiries should be addressed to the Secretary, Royal Academy, Piccadilly, London, W. 1.

The members of the Committee are:—Edward J. Poynter, Aston Webb, Hamo Thornycroft, Thos. Brock, Frank Dicksee, Reginald Blomfield, and Charles Sims.

School War Memorials.

At a meeting of Old Haileyburians held at the Goldsmiths' Hall on January 9, it was resolved to raise a sum of £50,000 for the two purposes of educating at Haileybury the sons of Old Haileyburians who have fallen in the war and of building a memorial hall to take the place of the existing dining hall.

The Dean of Canterbury presided at a meeting at Caxton Hall, Westminster, for providing a war memorial for King's School, Canterbury. The meeting endorsed the suggestions of a committee that a portion of the memorial fund should be expended on some visible memorial at Canterbury, and that the bulk of it should be set aside for assisting the education of the sons or relatives of those who had fallen in the war.

CORRESPONDENCE.

The Future of Architecture, or the Architect's Future.

SIR,—The gifted man there is always room for. Let the architectural field be cleared for them in any way possible should be our devout duty. We are troubled about architecture, and we are anxious about our profession, for the architectural field has been overrun and profaned. Analogous to the natural field, the field of architecture has its thistles, weeds, and nettles. Can we clear the field? Can we eliminate the "upholsterer decorator," the "surveyor designer," and the mere draughtsman? I do not sneer at these weeds; they are natural growths, wrongly located. From a public point of view, the Botanical Gardens contain cultured plants, and, from the same point of view, the architectural field contains cultured architects, it may be said; but is this so? If it were true, the public would be safe. Are the public safe? Can the public rely on getting architecture from all architects? If they go to an architect and do not get a cultured building, they are unjustly treated. So much for the moral standpoint. Now, is it humanly possible for one man to know all that the public demands for the healthy and artistic completion of their buildings in every detail? It appears to me we want an architectural hospital—a hospital to which an architect can take a case which he feels baffles his skill. Do not let pride make us shake our head. Architects (the real article) qualify, like doctors, at an early age. They then know, at any rate, the least that the law regards as essential for them to practise. But the sequel in the two professions is very different. If a young doctor has a patient whose symptoms are obscure he has the consultant and specialist to fly to, or he can send the case to the hospital with the benefits of a staff to uphold his reputation, or, at any rate, to afford the best treatment to one of the public.

But the young architect treats his case single-handed; at any rate, should he find his task beyond his skill, has he any similar facilities? Or does the young architect regard his reputation or his case in the way a doctor does? Sufficient this, perhaps, to preface what is in my mind, viz., the hopelessness of a young architect pledging himself to possess the knowledge of the whole circle of the sciences. To use a vulgarism, architecture is not a one-man show. So how is architecture to be obtained, from a public point of view? *They* don't understand architecture any more than they understand pathology or pharmacy. The drawings shown are as unintelligible to them as a physician's prescription. And my idea is that the alternative to giving them drawings to gaze at is to show them a model. If architects were less of draughtsmen and concerned themselves with design, the idea could be drafted with a quill pen; full size details made on rough paper, essential dimensions given, and the modeller from these make his miniature in plastic material, or otherwise. Then further safeguard your client and the architect by submitting the model to a jury or committee of the Royal Institute of British Architects, whose approval must be first obtained before the architect recommends his client to erect the building. If we really mean to have architecture, then, truth, beauty, vitality, restraint, refinement, repose, grace, breadth, scale, proportion, light and shade, colour, solids and voids, balance and symmetry must be dealt with, and this indicates, to my mind, the absolute necessity of our best recognised architects being consulted. Supervision, not suppression, is required. In conclusion, I advocate a public exhibition of models of buildings, not a one-room annual display of architects' designs in a room chiefly used for rest and light refreshment. Get the public to see what buildings possessing architectural merit look like, and for an educational repast show a few of the villainies in an ante-room.

EDWARD A. JOLLYE, A.R.I.B.A.
Hampden House, N.W.

A Florentine School of Tapestry.

SIR,—I have just received a letter from Count Marcelli, referring to my illustrated notice in your issue of March 8 last, of "A Florentine School of Modern Tapestry"; and will ask your kind permission to correct two slight errors which he has indicated to me.

The first is obviously a printer's error—in "altering the name of Poccetti to one similar, but not identical." The second, which seems more serious, is that I had included the fine series of the "Story of Esther" among the achievements of Florentine tapestry weaving.

This series was not, as Count Marcelli now points out, one of the Medicean tapestries. "We have in Florence," he writes, "three of the Esther Series, two of them French and one Italian, executed in Rome."

Having put myself right on this matter I wish now to express, on behalf of Count Marcelli, his interest—nay, more, his enthusiastic approval and support—in the project initiated by Sir George Frampton.

He points out to me what was unknown to myself, and may be to many of my readers: that the famous Peter Spiring, one of whose tapestries he himself possesses, after the failure of the Spanish Armada to crush English liberty, executed a very beautiful series of tapestries on this subject, which were destroyed by fire; but he adds with great feeling "the actual war might be woven by your glorious wounded into tapestries as great and as morally suggestive."

More than this, Count Marcelli offers to place for a period—which he suggests as two years—some of his own highly skilled workers (among whom he includes the name of the Maestra Pia Cassignoli, who is mentioned in my article) at the disposal of the proposed English School of Tapestry Weaving, asking only for himself that he should be properly secured against loss in the matter.

Knowing Count Marcelli's affection for England, which in this letter he says: "I love as a second country," I know that this generous offer is entirely disinterested; but he adds—and it seems to me a very pertinent query—"Does not the school of William Morris still exist in England?"

SELWYN BRINTON.

Burlington Fine Arts Club, W.

Municipal Housing.

SIR,—It seems probable that the bulk of the houses which the Government proposes to finance will be designed and carried out under the superintendence of official architects. The illustrations of the efforts of some of these gentlemen, which you have published in recent issues, possess, therefore, great interest to members of the profession who are outside this privileged class.

I desire to draw attention to what I consider are defects in one of the plans illustrated in your issue of March 22, defects which, had they appeared in plans submitted in the recent competition, would have seriously jeopardised the chances of the authors of the plans in which they occurred.

I refer particularly to the sanitary arrangements of the houses in Blocks 26 and 27 on the L.C.C. Old Oak Estate. The bathrooms are placed over the front porches, and are so arranged that the w.c. basins abut upon the party walls, and that at some distance from the outer walls. This will necessitate a long branch to reach the outer wall, and, after a somewhat sharp bend, another branch of fair length before the vertical pipe can clear the opening to the porch. I am supposing that building by-laws of ordinary character are in operation. The baths also have their outlet ends to the party walls, necessitating lengthy waste pipes. A re-arrangement of the fittings would enable these defects to be overcome. The wisdom of putting the bathroom in the front while the scullery is in the rear is open to question, by reason of the extra water pipes and drains involved; but surely nothing can be said for placing the coal store in the centre of the house, except ease of distribution over the floors of house when new coal is brought in or when part of it is removed for use.

The larders provided will certainly not be conducive to "food hoarding," but a small cupboard in the angle of a living room is not an ideal contrivance for preserving meat or milk during the hot months of the year.

The sculleries in several of the plans show some of the usual defects which almost seem inherent in this class of house. In some the doors are placed so that the traffic passes diagonally across the room, cutting up the limited space in an undesirable manner; and in nearly all cases the outer doors are so placed that a person engaged at the sink must move aside in order that the door may be opened.

My criticism of these plans is not intended in a captious spirit, but is offered in the hope that it may lead to the elimination of similar defects in some, at least, of the houses to be erected in the near future, for local authorities, like sheep, are apt to follow each other somewhat blindly, and I have no doubt these plans of Mr. Riley's will receive, and in many respects deservedly, that imitation, which, we are told, is the sincerest form of flattery.

JAMES R. WIGFULL, A.R.I.B.A.

The War and Architects' Services.

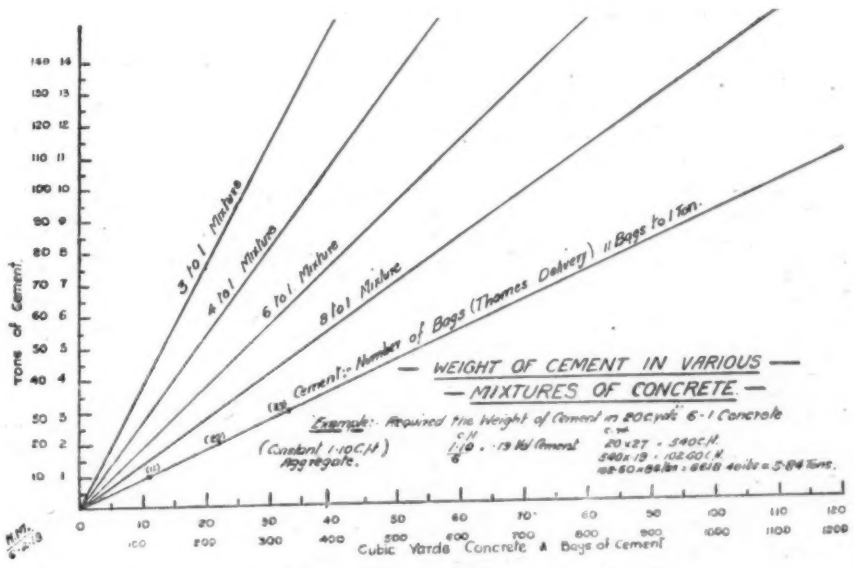
SIR,—In view of the possibility of the age limit being raised to 50 and the thousands of architects that will be affected, it will be interesting to know if the Institute is taking any steps to ensure that their services be properly utilised.

A local case proves the necessity of some combined action if the country is to be benefited by the extra man-power. In a shell factory, a capable manager of the building and engineering department has recently left, his place is filled by a departmental manager from a local dress material warehouse. Such cases can be cited innumerably, yet we are trying to win the war. If wastage of man-power and wealth will do it, we need have no fear.

A.R.I.B.A.

Graph Showing Weight of Cement.

SIR,—Many of your readers may find the enclosed graph useful in determining the amount of cement required when taking out concrete quantities when the use of Thames ballast is specified, and may form some guide when washed gravel and sand only are available. The results have been compiled from numerous experiments conducted on a large contract where some thousands of cubic yards have been deposited. The graph only shows requirements up to 1,200 cubic yards, but further quantities can be arrived at by analogy. H. MARTIN.


3 to 1 Mixture
4 to 1 Mixture
6 to 1 Mixture
8 to 1 Mixture
Cement:- Number of Bags (Thames Delivery) 11 Bags to 1 Ton.
— WEIGHT OF CEMENT IN VARIOUS —
— MIXTURES OF CONCRETE —
Example:- Required the Weight of Cement in 80 C.yds. 6-1 Concrete
(Constant 1·10 C.H. Aggregate.)
Tons of Cement
Cubic Yards Concrete & Bags of Cement

Graph showing weight of cement.

The R.I.B.A. Cottage Competition.

SIR,—I thoroughly agree with your comments regarding the R.I.B.A. competition. For putting in hand after the war housing schemes, three distinct features appear to be required: new ideas as to materials—different from the stereotype pre-war houses; a freshness of design, which is as yet lacking; and a scheme devised whereby the individual will be able to become owner within a term of years. A proportion of the capital outlay to be provided by the State to the builders, whether by municipal or private enterprise.

JOHN BESWARICK.

BOOK.

The Strength of Structural Elements. By ERNEST H. SPRAGUE, A.M.Inst.C.E. (London: Scott, Greenwood & Son. Price, 4s. net.)

ALTHOUGH the subject covered by the book is one which has been dealt with by many authors in the past, there is still a need for a volume which treats the matter in a simple yet practical manner, and enables the student to grasp the essential principles together with their application to actual design. The author has apparently realised this, and he devotes considerable space to the explanation of those simple items which are the foundation of a real understanding of the calculations and design of structural members. A general introduction is given in the first instance, and this is followed by a chapter on the internal forces in a structure, in which the different stresses are explained, together with the need for a factor of safety and similar matters. Connections are the subject of the next chapter, and these are well illustrated and described for various classes of work. The author then takes up the questions of the internal stresses in a structure and the resistance of beams to bending, after which he passes on to composite beams, plate girders, struts and columns. Owing to the importance of continuous beams in modern structure, a chapter is devoted to these, and herein is included an extension of the proof of the theorem of three elements to cover a wider range of cases than is usually considered. The deflection of beams and oblique flexure are other important items which are treated, and these are very clearly explained despite their difficult nature.

Generally speaking, the volume is a very useful addition to The Broadway Series of Engineering Handbooks, and it should appeal to the student, as worked examples showing the application of the theory are given throughout, which will be of value when the subject is being studied at home.

Leading Contents.

	PAGE
THE IDOL OF THE DRAWING BOARD	219
NOTES	220
SCIENTIFIC HOUSES AND COTTAGES	221
GENERAL NEWS	222
SUGGESTIONS FOR TREATMENT OF WAR MEMORIALS	222
CORRESPONDENCE	222
MEETINGS	224
THE SURVEYORS' INSTITUTION	225
THE BUILDING TRADE AND THE WAR.....	227
BUILDING BRICKS.....	227
LAW REPORTS	228
TRADE ORGANISATION DEVELOPMENT	230

ILLUSTRATIONS.

Design for Centrally Heated Houses.

WE give illustrations of two designs by Mr. Murray, one of them, shown in an inset illustration, being for a one-storied bungalow, the other, on our "Notes" page, being of a two-storied house. Both illustrate the points raised in his letter on page 221.

An American War Hospital in France.

WHILE our authorities object to the publication of illustrations of most of the buildings erected for purposes of the prosecution of war for some utterly unfathomable reason, America shows in this and in her general treatment of the Press a more enlightened attitude. It is, in fact, from American sources that we can learn most of what is going on here behind the official veil of secrecy which is so tightly drawn across our eyes. We have received a copy of a most interesting booklet published by the American Institute of Architects dealing with building work in England in connection with the war.* The writer is Mr. Frederick Ackerman and the work is illustrated with numerous scale drawings of houses, schools, churches, institutes, and other buildings erected for the purposes of the war in various parts of the country—it may be indiscreet here to say where! The writer is very enthusiastic about the progressive policy adopted and the importance attached to good housing conditions here; whether he would feel quite so enthusiastic if he realised the manner in which the services of architects of standing have been dispensed with or the intolerable load of unnecessary bureaucracy under which we are now groaning, is uncertain.

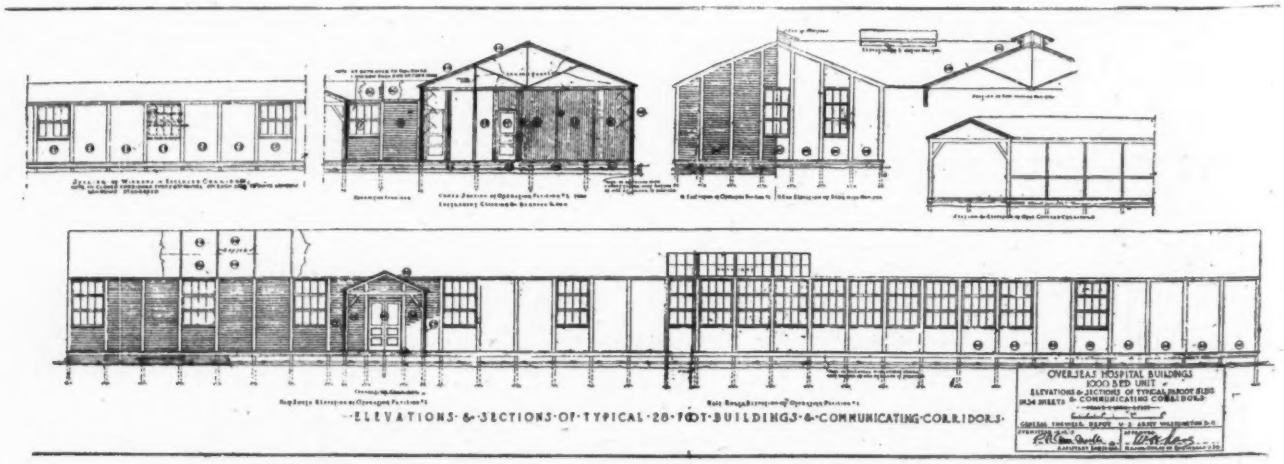
The different treatment accorded the technical press in a similar case in America is shown by the publication of the design of a War Hospital in France given in the *Architectural Record* of New York.

The planning of the hospital was placed in the hands of Mr. Charles Butler and Mr. Edward F. Stevens by the General Engineer Depot U.S. Army, of which Lieutenant-Colonel W. H. Rose is the head, and the plans have been approved by the office of the Surgeon-General of the U.S. Army. The units consist of 87 buildings each, and are described as comprising all the essential departments of an up-to-date hospital of demountable, portable construction.

The type of construction used is similar to that employed by Mr. Butler for the Rockefeller Demonstration Hospital in New York. The block plan shows the ideal grouping of the various blocks, but the actual lay-out will depend on the extent and contours of the site finally selected. The receiving building in a hospital of this type is necessarily large. The operating buildings—two in number—are thoroughly equipped with every modern convenience; the walls of the operating rooms are rendered smooth by an additional surface of enamelled canvas, while the floors are formed of cement. Separate operating buildings are provided for ear, nose and throat cases, as well as dental and laboratory work. The ward buildings, of which there are thirty-two in each unit, are much the same as those adopted in the corresponding buildings connected with the English and French armies. Each ward contains six emergency exits. The side ward panels, hinged at the bottom and opening out, form a ramp, down which the beds can be run in case of fire or other emergencies. The walls, doors and roofs being double, the buildings will be comfortable both in summer and winter. The utilities consist of a linen room, nurses' office, toilet room, surgical dressing room, small serving kitchen, a small office for the military attendant, and an isolation room for a moribund or delirious patient. In each group there are three isolation buildings for cases of contagious disease. These rooms provide for twenty-six patients each, and are planned on the Pasteur, or single-room system; the ten single, or isolation rooms, are entered from the outside. Each room is self-contained, having a water-closet and sink with special elbow faucets so that a patient need not leave it until convalescent. The other blocks comprise convalescent wards, neuro-psychiatric wards, officers' ward buildings, administration, kitchen and laundry blocks.

The construction of the buildings is simple and composed of standard 5 ft. 0 in. units. The construction of the roof is very simple and effective. The heating system is laid out with several small heating plants, so that no large pipes will be required, a 3 in. pipe being the largest used outside the boiler house. It is stated in the descriptive article accompanying the illustrations we give (by the courtesy of the *Architectural Record* of New York) that in the spring of 1916, France had 600,000 beds and England 550,000 in army, field, base, private and public hospitals, which will give some idea of the magnitude of the work which has to be done in connection with the war, in which the American forces are now taking part.

* "What is a House? Our National Obligation. The Story of England's colossal work in building Workmen's Houses as a pre-requisite to Maximum Output of War Munitions, and as a part of her Programme of Social and Economic Reconstruction after the War." To be obtained from Messrs. Batsford, 2s.


OVERSEAS HOSPITAL BUILDINGS
1000 BED UNIT
ELEVATIONS & SECTIONS OF TYPICAL 28 FOOT BUILDINGS & COMMUNICATING CORRIDORS

An American War Hospital in France.

OBITUARY.

Mr. H. D. Blake.

We regret to announce the decease, at his home, "The Haven," Red Post Hill, Dulwich, S.E., on the 4th instant, of Mr. H. D. Blake, who was a director of the Limmer and Trinidad Lake Asphalt Company, Ltd., and who relinquished his position as managing director on the 31st ultimo.

Mrs. Waterhouse.

We regret to announce the death at Yattendon Court, Berks, of Mrs. Elizabeth Waterhouse, the widow of Alfred Waterhouse, R.A., aged 83. *The Times*, in announcing her decease, says:—"Mrs. Waterhouse came of a distinguished family of Friends, her father being John Hodgkin, and the late Thomas Hodgkin, the historian of 'Italy and Her Invaders,' being her brother. Widely and wisely read, she had marked literary gifts, which she put to good use both as an anthologist of a grave and philosophic kind and as a writer in an attractive homiletic vein. She also wrote occasional verse, and it is not here out of place to record that some dignified lines, entitled: "In Mesopotamia,' and signed by the initials 'E. W.,' which appeared in these columns in February, 1916, were written by her. She was married to Mr. Waterhouse in 1860, and after his death in 1905 she continued to live in the house which he had built at Yattendon, where for her many habitual acts of kindness she will be much mourned. Her eldest son is Mr. Paul Waterhouse, his father's partner and successor, and her elder daughter is the wife of Mr. Robert Bridges, the Poet Laureate."

MEETINGS.

SATURDAY, *April* 13.

St. Paul's Ecclesiological Society.—Visit to St. Andrew's Church and Schools, &c., Holborn, W.C., under the guidance of the Rev. E. C. Bedford, M.A. 3 p.m.

WEDNESDAY, *April* 17.

Edinburgh Architectural Association.—Annual Business Meeting. 8 p.m.

THURSDAY, *April* 18.

Institution of Electrical Engineers (at the Institution of Civil Engineers).—Mr. L. Andrews, on "Overseas Distribution of Engineering Appliances." 6 p.m.

FRIDAY, *April* 19.

Institution of Mechanical Engineers.—General Meeting. 6 p.m.

Books Received.

NEW TOWNS AFTER THE WAR. By New Townsmen. (London: J. M. Dent & Sons, Ltd. 1s. net.)

THE WELSH HOUSING AND DEVELOPMENT YEAR BOOK, 1918. Edited by Edgar L. Chappell. (Cardiff: The Welsh Housing and Development Assn. 1s. 6d. net.)

THE SURVEYORS' INSTITUTION.

MR. A. L. RYDE presided, on Monday, at a meeting of the Surveyors' Institution, when Mr. E. H. Selby read the following paper on the

"COST OF BUILDING BEFORE AND AFTER THE WAR."

"The paper I have been asked to read to you this evening has for its object the consideration of prices of the various kinds of building and constructional work that obtained before the war, the prices of work during the war period, and the prices of work that will probably rule after the war is over. The first two phases can be dealt with from experience and facts, but the last is mere conjecture, and brings the imagination into full play—a very necessary qualification in computing prices.

In considering prices it is necessary to take into account every kind of work, both that of a purely engineering character, and the various architectural and building works, repairs, maintenance, and decoration, the prices of all of which differ very largely, and are arrived at by a variety of methods. The main factors governing prices are, of course, the cost of labour and the cost of materials. The cost of labour includes the necessary preparation of the materials, the adaptation for their respective positions, and the fixing and finishing in the work. In pricing the cost of the labour the estimator must have had long and varied experience, as in considering the relative cost of labour and materials, which is roughly about half and half, the cost of the former will seriously affect the price of the item. The cost of the materials, whether raw materials, such as sand and ballast, or manufactured materials, such as bricks, cement, steel, &c., can be ascertained by obtaining quotations from the merchants or manufacturers supplying such goods, and it is the task of the estimator to apply those prices to the various items. In the computation of prices based on the cost of labour and materials, it is sometimes asked whether the prices are correct, or merely based on some precedent or average.

An estimate or a valuation of any sort has been described as an approximation to the truth, and that approximation is most efficiently provided through experience. Many men have given up their entire lives to the compilation of prices, and very valuable data have been obtained; but the conditions of modern life change so rapidly that prices have continuously and regularly to be revised. In my opinion the science of pricing—and it is undoubtedly a science—is yet in its infancy. There has been a common saying amongst surveyors ever since I can remember that prices can be "stretched." I think that saying must have arisen from the varied and extraordinary prices that are often put down for work by contractors, and which surveyors have to make use of for building up other prices in settling the final accounts.

Compare the tenders submitted for any kind of work, great or small; the variation in prices is considerable, showing the different views of the contractors competing for the work. I would undertake to say that if the various prices of the different tenders were compared in detail, the differences between them would be even more apparent than the difference in the amounts of the tenders, and not only that but the totals of each trade would differ largely. It cannot be argued that all these prices are correct, and some of them must, therefore, be wrong.

It can be readily understood that the rate of profit added might vary to some extent, and that the overhead charges are larger in some firms than others, but one would suppose that the prices would vary consistently to cover these contingencies. Office traditions, based on former costs, handed down from time to time, have no doubt something to do with this, but even these in the various offices must differ largely. The question of finance has also to be considered, and no doubt the work which has to be executed first is often priced high, and the finishings executed at a later date priced low, so as to facilitate the financing of the job. This method must be worked out most carefully on the average system, and will not necessarily apply in all cases.

The effect of good or bad office administration, and the efficient supervision of work at the site, must have a large influence on the prices for which work can be carried out, both with regard to the buying of materials and the cost of labour. If the materials are bought at the proper time and in the best markets no doubt large savings can be effected, and if a continuous and regular supply of materials is maintained at the job, in the first place, there is no waiting, and they can be handled and dealt with immediately on delivery, while no wastage occurs by having to shift them about afterwards with always the chance of damage. The quickest and most economical means of carrying out work at the site is by making arrangements ahead, and seeing that a general scheme is arranged at the commencement for the conduct of the whole job, and, above all, by the proper and accurate execution of the work in the first place, so that it has not to be done all over again.

The introduction of machinery has largely affected the cost of production, not only in the manufacture of certain materials used for buildings, but also in the actual carrying out of the work at the site. Compare the old method of carrying up bricks and mortar in hods with the new hoisting apparatus in use, or the driving of piles by hand-operated monkey with the steam hammer. I think that many more labour-saving appliances will come into vogue unless the cost of building operations is considerably reduced, and when once the prejudice against these innovations has been overcome, improvements and developments will rapidly follow.

The methods adopted for many years with regard to scaffolding have not yet been altered, and although the tying together of scaffolding has been simplified, there remains much to be done in the way of reducing the cost of this item.

In addition to the prices of labour and materials employed in the works, there are also the statutory and temporary works necessary to comply with the various building regulations and requirements. The cost of these statutory and temporary works has to be separately allowed for or to be spread over the various items priced. Scaffolding, gantries, hoisting appliances, temporary roads, offices, the supply of water, sheds for materials, and offices and sheds for the staff and workmen, not forgetting the necessary cooks and attendants for them, lighting, watching, fees to the various authorities, and a host of other contingencies, including the various insurances, have all to be taken into consideration and provided for. There is also the question of the general labourers, who do not appear to be working in connection with any particular trade, but to be generally clearing up and attending upon, cutting a way for, and making good after everybody else, the cost of whose work cannot be very well allocated to any particular trade, but, in the aggregate, comes to a pretty large sum.

There is a large and variable allowance to be made for waste in all materials, including the increase in bulk of the earth excavated, especially if clay is met with, which has to be disposed of. In mentioning waste I do not only mean the waste arising in the preparation of the various materials, but also the actual decrease in bulk of certain materials in the process of mixing, particularly concrete.

Coming now to the various methods of obtaining prices for carrying out work, there are two generally adopted: the first by tender, with or without competition, and the second by direct employment of labour and purchase of materials. The first method may be subdivided into two heads: (1) The lump sum tender, and (2) a schedule upon which the work executed is measured and priced.

With regard to the method of obtaining prices by tender, the lump sum estimate is of assistance in arranging the finance for the intended work, although the variations that usually occur may seriously affect the total cost when the same are measured and valued; the cost of these variations may, however, be closely approximated during the progress of the work, so that arrangements can be made from time to time to make the necessary adjustments with regard to finance. The principal benefit arising from this kind of tender is to enable people to cut their coat according to their cloth. Approximate estimates are all very well, but in many instances people require to know fairly closely what money they will be called upon to find, and if the tender received for the work is too high, or beyond the means of the building owner, modifications can be made to suit the requirements of the case before the work is commenced.

Where money is not of so much importance, or where work *has* to be carried out to meet legal requirements, or the exigencies of the public service, or where the work cannot be definitely determined upon at the outset, the schedule of prices is preferable. This method usually works out fairly well, provided the descriptions in the schedule of prices do not cover too many contingencies, and the prices for the various items can be properly estimated on given data, so that, if different circumstances arise, the prices can be modified accordingly.

With regard to the method of carrying out work by direct employment of labour and purchase of materials, the first objection to this is the fact that the contractor, who has made a life-long study of this particular form of work, and who has all the incentive of profit for the exercise of individual effort and enterprise, is eliminated. The best means of purchasing and employing plant, both for the particular job and afterwards, the purchasing of materials in the most economical way, and making the most of efficient administration and superintendence and employment of labour, will all fall on the shoulders of the amateur, and not the expert.

Of course where Government departments or large public corporations are concerned, who are continually carrying out work by these means, the case is somewhat different; but even here, although by constant use they may be able to purchase largely and upon favourable terms, the individual touch is wanting, and whether the workman will get through as much work in this way as for a contractor is questionable. This can be ascertained only by results, and if the costs are carefully kept, these can be proved to a certain extent, but not entirely, as the value of the work done is largely affected by the methods employed.

Work can generally be done in a variety of ways, and the materials used differ largely in quality and price. If the work actually executed is measured and valued, a reliable comparison could be made of the two methods; this would entail a great deal of labour and expense, but it is only by this means that a really reliable comparison can be made. So many points crop up during the execution of the work, and so many variations are made, in method and material, that it is only by actually ascertaining what amount of work has been carried out that a correct value can be placed upon it.

There is a third method of carrying work out on a profit basis, either a percentage on the cost, or a limited profit on the work. My firm have acted as quantity surveyors on only two fairly large jobs carried out in this particular method, but the overhead charges, mechanical and other plant for use on the work, and the profit, were tendered for in competition, and an accurate estimate made of the cost of the work at the commencement. Reports were made from time to time of the cost of the various alterations that occurred, also frequent careful comparisons were made of the actual cost of the work with the estimated cost, and I am bound to say that the result proved satisfactory.

Without expressing any opinion as to the wisdom of executing work in this way, the success, or otherwise, of the job would largely depend upon the integrity of the contractor for the work and whether he gave it his careful personal supervision.

The advantages of competitive work are an incentive to economy and a general tendency to efficiency both in employer and employed. Various expedients are tried and experiments made to reduce cost. A closer personal touch is

maintained with the work by the contractor, and the cost in its different stages is more carefully followed. By this means not only can the actual cost of the work be carefully compared with the estimated cost, but reliable data be obtained by pricing future work.

Taking now the necessary qualifications of an efficient estimator or surveyor, to enable him to arrive at a great number of prices for all sorts and conditions of work, prices which he must build up entirely himself from acquired data, experience, and knowledge of cost for both materials and labour, I think it will be admitted that he must be a man of some attainments, with plenty of pluck to grapple with and overcome difficulties, avoid pitfalls, and not afraid of taking considerable risks and responsibility. The science of estimating must have been carefully studied for many years, and every opportunity taken for enlarging and improving his store of knowledge and data, not only from books, but from actual work.

In arriving at prices many considerations have to be taken into account, owing to the varying character of the work to be priced and the number of materials employed.

In the first instance there is the work of the purely engineering type; secondly, the general building work, repairs, and maintenance; and, thirdly, decoration of a more or less elaborate type; so that one day the estimator may be called upon to price an estimate for a bridge, dock, pier, or railway; the next day a large block of offices or flats, a public building, a private house, or a church; and the third day the elaborate finishings of a large club, a luxurious hotel, or the delicate intricacies of a lady's boudoir. I believe that one facetious counsel described a surveyor as "a gentleman who could value anything from a deep sea shell to a planet." Whether or not he may be able to value either or both of these somewhat unusual commodities, if he be able to price all the estimates named (and there are many others), I think it must be admitted that he must have made the most of his time and experience.

It must not be supposed that all these various types of work are always estimated for by one man only, as a great deal of the work is highly specialised, but there are a great many estimators who are capable of formulating and have to formulate prices for all these various works with the assistance of specialists.

Although a great many prices apply about equally to most jobs, there are many others that most emphatically do not. A good estimator must be able to build up the price for nearly every item called for, both as regards labour and materials; but after obtaining the necessary quotations for the materials (if he can do so) the responsibility of estimating the cost of the labour generally falls entirely upon his shoulders. In estimating for work, clear and concise particulars are required both in the way of drawings and specification, or of drawings, specification and bills of quantities.

When drawings and a specification only are supplied, a great deal of energy is wasted by each competitor having to take out some kind of detail particulars in order to arrive at a price on the information given. If, however, bills of quantities are also supplied, that process is done away with, and only pricing is necessary.

It is most essential to inspect carefully the drawings and to visit the site before sending in a tender, more especially when there are alterations to be carried out to existing buildings. The site and approaches have to be taken into consideration, and the method to be adopted of getting in materials and hoisting them to their required positions.

In all large contracts, particularly of the engineering type, the nature of the earth to be got out is a most important factor in arriving at a price, and, in most cases, the description of the excavation, whether taken from the specification, bills of quantities, or schedule of prices, has, like charity, to cover a multitude of sins.

Firstly, there is the cost of the actual digging out of the earth, and its disposal; then the planking and strutting, timbering, and occasionally dams, to be taken into consideration; last, and not least, is the question of water that may be met with. A free hand is usually given to the contractor to carry out the work in any way he may see fit, but he is invariably called upon to take all risks. Now to arrive at a price for such excavation, whether in earth, or under water, needs a thorough grip of the whole job, and usually necessitates devising a comprehensive scheme for carrying out the work, as well as the designing and the cost of much expensive plant.

The question of depth, where mechanical means of hoisting can be applied, does not affect the cost of the actual digging to any great extent, although the planking, strutting and timbering are largely increased, and all risks enhanced.

To imagine a price that can be put for such work, without long and intricate calculations, is a fallacy, and the estimator for such work must have a certain amount of engineering knowledge, or have the assistance of an engineer in arriving at his figures. It will, of course, be readily understood that he who can quickly obtain a grasp of the whole job and can conceive and design the most expeditious and efficient means of carrying out this kind of work while estimating, will generally obtain the contract.

This kind of engineering work is, of course, highly specialised and the various data obtained from previous work are of the greatest assistance in arriving at prices. It must not be supposed however that one job will form a precédent for all others; and to imagine that, because one class of excavation in a particular locality can be executed at a certain price per yard cube, similar excavation can be carried out in another locality at the same price might prove to be utterly wrong, as the soil to be dealt with might be of quite a different character.

May I say a word with regard to the excavation in more ordinary building work, where deep basements have to be constructed, and where bills of quantities are supplied that purport to give the necessary planking and strutting and timbering in detail? To imagine that a large and deep excavation can (except in rock or other stable material) be got out in one single operation, and that timbering is only necessary round the extreme sides, is wrong. In one instance of large, deep excavation that I have come across, the excavation had first to be got out in trenches round the site, some of which trenches, on account of the construction of the retaining walls being ferro-concrete, had to be got out 60 feet wide and over and about 35 ft. deep, the timbering of which cost more than the total cost of the excavation and carting away. On the other hand, I also know of a case where certain exact particulars were set forth in the bill of quantities of the width and depth of the trench to be got out round the site, and in arriving at the price for the timbering, the contractor carefully based his price for same, not on the total depth, but on 1 foot only in depth.

The probability of finding sand or ballast suitable for use in the work has also to be taken into consideration, although this must be discounted to a certain extent, as water is frequently met with where either of these materials is found, and the finding of too much of either of these useful materials is not always an unmixed blessing.

Taking concrete as the next item in pricing, the difficulties here are not so great, as reliable prices can be obtained for the cost of the materials, and the estimator has only to form his own opinion as to the probable cost of the labour, which must largely be governed by the size of the concrete to be filled in, as, if concrete can be mixed in a mechanical mixer and shot direct into position, the cost of same is much less than if mixed in small quantities by hand and filled into ordinary trenches. The cost of shuttering is an important item in concrete above the ground, and if not given in detail some further calculations have to be made by the estimator.

The next item we come to is brickwork, again involving the estimator only with regard to labour, as accurate prices can be obtained for the cost of the materials. One item of brickwork I was once called upon to price was unique in my experience: the description was so many yards cube of "Brickwork in any position including facing, glazed or otherwise." The cost of a rod or yard cube of brickwork in a big embankment, or a thick wall finished with ordinary facing bricks, is somewhat different from the cost of a 4½ in. wall faced both sides with glazed bricks.

Taking stone as the next item to consider, here we get a material that has been worked under varying conditions from time immemorial. The advent of machinery largely affected the cost of working stone, and very careful records have been kept of the cost of this working, enabling the price to be put down to cover the cost of the stonework at per foot cube.

The prices at which granite could be bought ready worked for fixing have always been a mystery to me, but perhaps the fact that some of the firms producing such granite work have disappeared may account for it.

With the advent of constructional steelwork and ferro-concrete, a complete revolution was made in the structure of buildings, largely affecting the cost and complicating the design, but giving far more space for use in the building.

The cost of labour on ferro-concrete work is no doubt high. Not only has the steel reinforcement to be placed in exact position, but also to be kept there while the concrete is being filled in; and where concrete has to be filled into beams, with reinforcement in the top as well as in the bottom, the labour involved is most costly. Again, if I may say so, the design is so intricate, and the strength so accurately calculated, that the work has to be most carefully and exactly executed, and men found and trained for this purpose. The ties and stirrups have also to be kept at their proper distances, and I believe that twenty ties or stirrups in a lump are not supposed to fulfil the duties of those designed to be placed at regular intervals.

The cost of centering and moulds for ferro-concrete work has to be very carefully worked, especially where there are large spans and where much scaffolding is necessary. Experience gained in this class of work from the actual cost is, of course, of the greatest assistance to the estimator, but it is necessary to take the work in full detail, as the cost of the various kinds of centering differs enormously. The proper value of this ferro-concrete work has been fairly accurately ascertained, and the wide differences in prices that obtained in the early stages have to an extent disappeared.

Before leaving the question of the prices for excavation, concrete, brickwork and stonework, I would like to observe that there are no stereotyped prices for these classes of work; each has to be worked out on its respective merits for each class of job in each particular locality. Although approximate prices may be put down the cost of materials and transport differs so largely in different localities that it is impossible to estimate closely without making full inquiries on the spot.

Taking the remaining trades to be priced here we get much more uniformity. The cost of materials does not differ largely in the various localities, and there are not nearly the risks to be run in the finishings (providing care is taken in selecting the materials, and carrying out the work) as there are in the constructional part of the work. The cost of transport is not nearly so serious, most of the materials being of no great weight.

In the formulating of some hundreds of prices that comprise a tender, the estimator must have a good general knowledge of the value of materials, as it is obviously impossible to get in quotations for everything required in the short time allowed for the preparation of tenders. He must also have the usual cost of labour at his fingers' tips. If estimators could spare the time, very valuable information can be obtained by comparing the costs of the various trades with the totals of the trades in the accounts, and if this is done regularly and continually, closer estimates can be prepared, and if certain jobs do not pay, or pay a higher percentage than that estimated for, unless there are very special reasons for it, the causes can usually be discovered and rectified the next time."

(To be concluded in our next issue.)

THE BUILDING TRADE.

THE BUILDING TRADE AND THE WAR.

WE have received the following letter from the North-Western Federation of Building Trade Employers :—

SIR,—The Employers and Operatives of the shipbuilding industry have recently had occasion to protest against the treatment received at the hands of the Government, where their offers of help have been refused. The organised Building Trade has been similarly treated, and the North-Western Federation of Building Trade Employers are of opinion that the time has come when the country should be informed upon the subject.

In July, 1916, all building operations of over £500 in value were prohibited, unless a Government permit was obtained. One ostensible reason for this was that a large amount of building work was required for the housing of troops and the erection of munition works, &c. In its haste to secure buildings for these purposes, contracts were given out on the basis of profits forming a percentage on cost. At the same time departmental officials insisted on far more men being kept on these jobs than could be properly employed owing to lack of co-ordination between the supply of materials and disregard of the space in which men could work to advantage. More than two years ago the North-Western Federation caused protest to be made against these wasteful methods, but without avail. Instances were furnished to the Ministry of Munitions of cases where workmen were compelled to idle owing to bad organisation, but nothing was done.

In November, 1916, the conditions connected with Government building work had become so unsatisfactory from a national point of view that, on the initiative of the Liverpool Master Builders' and Operatives' Associations, the North-Western Federation again took action—this time in conjunction with the Operatives' National Unions. A conference was held in one of the committee rooms of the House of Commons between representatives of the Employers' Federation, the Operatives' Unions, and Members of Parliament representing North-Western constituencies. Representatives of the Ministry of Munitions were also present. References were made to the wasteful methods employed in the execution of building contracts and to the demoralising conditions which compelled men to idle their time away. To a considerable extent this was due to the system of contracts being let on the basis previously referred to, as tending to encourage the crowding of more men on jobs than could work to advantage. It was not to the interest of a contractor to keep cost low, as the more he spent the greater his profit. Alternative methods of handling the building work of the Government were submitted, based on the co-operation of the organisations of Operatives and Employers. The suggestions seemed to meet with the approval of the members of Parliament present. They were considered by a Committee appointed by the House of Commons, and turned down. The offer was repeated in various forms, on behalf of the London Master Builders' Association, and of the National Federation, but nothing came of it.

In October of last year two conferences took place at the Ministry of National Service, on the invitation of Sir Auckland Geddes. There were present representatives of the Employers' and Operatives' organisations in the building trade of Great Britain, and of various Government Departments. At the first meeting we were told of the difficulties on Government building jobs due to questions of wages and working conditions, and asked to suggest some method of co-operation between all the parties concerned in order to ensure the smooth and effective conduct of these important building operations. As a result of discussion, it was agreed that the best way to solve the problem was to leave the whole matter in the hands of a Wages Board, thoroughly representative of Operatives and Employers; and for this purpose it was suggested that the Committee which had sat to deal with the question of National Service for the building trade was best fitted to deal with this matter. In the afternoon of the same day a further conference took place, practically the same people being present, with Sir A. Geddes in the chair. The Chairman pointed out to the meeting the difficulties the Government had to deal with in getting contractors to undertake the building work most urgently required for war purposes, and in securing an adequate supply of labour. For these reasons it had been decided to consult representatives of the industry and to seek their assistance. After a very thorough discussion the suggestion was put forward that the various Government Departments should entrust their building requirements to a Joint Committee of Employers and Operatives, who would undertake the allocation of the work. This central Committee would approach the trade organisations in any locality where building work was required, and would arrange, wherever possible, for the co-operation of Employers and Operatives on the spot to get the work done. Five months have elapsed since these conferences took place, and nothing has been done to carry out the recommendations unanimously approved on that occasion.

The Federation does not at this stage propose to make any deductions from the facts above stated. It is for the public, who will have to foot the bill, to decide whether it is satisfied with the way its business is being misconducted.

In conclusion, we would say that no one can accuse Sir Auckland Geddes, or the members of his staff who were present at the meetings referred to, of any responsibility for the neglect to put into effect the suggestions emerging from the meetings. They welcomed the proposals, and appear to have done their best to get them adopted. The fault lies elsewhere, and it is for the people to insist, through their representatives in Parliament, that whoever stands in the way of the efficient discharge of the country's business must be "fired out."

For the North-Western Federation of Building Trade Employers,

THOS. FOSTER, *President.*
SAM. WIGHAM, *Secretary.*

BUILDING BRICKS.

The Minister of Munitions, in exercise of the powers conferred upon him by the Defence of the Realm Regulations and all other powers thereunto enabling him, hereby orders as follows :—

1. No person shall as from the date hereof until further notice sell or, except for the purpose of carrying out a contract in writing existing prior to such date for the sale of building bricks, deliver any building bricks of any description except under and in accordance with the terms of a permit issued under the authority of the Minister of Munitions, or purchase or, except for the purpose of carrying out such a contract as aforesaid, take delivery of any such building bricks from any person other than the holder of such a permit and in accordance with the terms thereof.

2. Notwithstanding Clause 1 hereof, no such permit shall be required for the sale, purchase or delivery of any building bricks to be used exclusively by the purchaser in the erection or carrying out of any separate and independent building or work not involving in such erection or carrying out the use of more than 20,000 bricks, or in the completion of any building or work lawfully commenced prior to the date hereof where such completion does not involve the use of more than 20,000 bricks as aforesaid, provided always that in each of such cases the purchaser shall have given to the seller at or before the time of purchase and delivery a declaration in writing signed by the purchaser specifying the precise nature of the work for which such bricks are required and the place where the same are to be used, and that the bricks to be purchased are for the purposes mentioned in this clause and for no other purpose.

Every declaration made for the above purpose shall be true and accurate in all respects.

3. Every manufacturer of building bricks shall comply with all such directions regarding the transfer or delivery of the bricks from time to time manufactured by him as shall from time to time be given to him on behalf of the Minister of Munitions by the Controller of Building Bricks, Ministry of Munitions.

4. Every person manufacturing or having in his possession any stock of building bricks shall furnish to the said Controller such returns as the said Controller may from time to time direct concerning output, stocks, deliveries, cost of production, prices or any other information relating to such building bricks.

5. All applications for permits under this Order shall be made to the Controller of Building Bricks, Ministry of Munitions, Whitehall-place, London, S.W. 1, and marked "Building Bricks Permit," and every person selling, purchasing, delivering or taking delivery under any such permit shall observe and perform all the conditions subject to which such permit shall be granted.

6. This Order may be cited as the "Building Bricks Control Order, 1918."

April 5, 1918.

NEW GOVERNMENT CONTRACTS.

War Office.

Varnish.—Naylor Bros. (London), Ltd., Southall.

Works Services : Erection of Buildings.—S. Easter, Ltd., Newcastle-on-Tyne; Holliday & Greenwood, Ltd., London, S.W.; T. D. Ridley & Sons, Middlesbrough; G. E. Wallis & Sons, Ltd., Maidstone. *Maintenance of W.D. Buildings.*—J. Cartmell & Sons, Ltd., Preston; R. Charlesworth, Hillsborough, Sheffield; L. T. Dadds, Canterbury; Jesty & Baker, Portland; Jones & Seward, Bournemouth; H. C. McNally, Drumcondra; J. W. Maw & Sons, York; F. Perren, London, N.W.; G. F. Smith & Co., Southsea.

Shutters (Folding, and Parts).—W. H. Briscoe & Co., Birmingham; C. W. Cheney, Aston, Birmingham.

Steelwork (Constructional).—W. Bain & Co., Ltd., Coatbridge; Dorman, Long & Co., Ltd., Middlesbrough; Frodingham Iron and Steel Co., Ltd., Scunthorpe; Hill & Smith, Ltd., Brierley Hill; Lanark Steel Co., Motherwell,

India Office : Store Department.

Brass Tubing.—Earle, Bourne & Co., Birmingham.

Copper Wire.—J. Wilkes, Sons and Mapplebeck, Birmingham.

Copper Bolt.—Delta Metal Co., E. Greenwich.

Copper Plates.—Williams, Foster & Co. and Pascoe, Grenfell & Son, London, E.C.; Vivian & Sons, Walbrook, E.C.

Glass.—Pilkington Bros., St. Helens, Lancs.

Iron, Bar.—Hull Forge, &c., Co., Hull.

Steel Sheets.—Pather Iron, &c., Co., Wishaw, Glasgow.

Metropolitan Police.

General Repairs to Metropolitan Police Buildings.—Extension of Contract for one year to December 31, 1918 : Messrs. Holland & Hannen, Bloomsbury, W.C.

LAW REPORTS.

Builders' One-Man Businesses to be Run by Committee.

A DECISION of considerable importance to builders was arrived at by the Shoreditch Tribunal recently, Mr. Harwood in the chair. For some time past there has been a constant stream of builders applying for exemption, many of whom held no M.A.R.O. certificates. Their medical category was high, but the fact that they were one-man businesses, however, decided the Tribunal to grant exemption, although they were reluctant to do so. Captain Fisher, the National Service Representative, said the needs had become much greater, and he had been directed to obtain from the Tribunal their agreement to form a committee to run these one-man businesses, or a refusal.

Captain Weber said that, so far as he could make out the idea, it was intended that about three out of four of these men carrying on one-man businesses should go, and they should be carried on by the fourth under the supervision of a committee. Captain Fisher, the National Service Representative, said that all the committee had to do was to look after businesses and see that they were honestly dealt with. Mr. Wakeling: They haven't to run the business, only to see to the interests of the woman left behind. Mr. Harwood: Perhaps a big liability might be incurred; what responsibility is there on the committee? Captain Weber: None at all; only a moral one. I can see quite a lot of good things come out of it; it is really only in the case of small one-man businesses, so that no big liability could reasonably be incurred. One man could quite easily buy for five or six shops, but at the present time exemptions are given to each of the men to save his business from being smashed up. The supervision has really only to do with accountancy, and as the Government are pressing for it, I suppose we must do something in the matter. Captain Fisher: They are pressing for an answer as to your intentions as it is such an urgent, pressing matter. Captain Weber said it wanted a man who was very tactful on the committee as there would be a good deal of suspicion in his case. It would be nearly as bad as being on the Tribunal. Mr. Wakeling said he would have to be a jack-of-all-trades, but would be a master of none. So far as he was concerned, he would not take on the job. It would never work in the cardboard box trade, as every man made a different kind of box, and nobody could carry on the other's business. Fancy the Mayor, Councillor Busby Bird, with his provision shops, running his own and somebody else's. He would be accused of smashing up the business if anything went wrong, and so would anybody else. Captain Fisher: Oh, no. Besides, it is not necessary for the committee to be members of the Tribunal. Mr. Wakeling: If the Government want it done, let them pay for it. If it was a paid job they would do it themselves with an army of officials. It is a most brainless institution. Mr. Harwood said the first thing they had to do was to agree to the principle of the committee. If they agreed to appoint one to run these one-man businesses, names could be submitted at the next meeting. If they found they could not handle the businesses properly, such cases could be brought before the tribunal. On a show of hands it was decided to appoint a committee to run the businesses.

Changes of Address.

The National Federation of Building Trades Employers of Great Britain and Ireland have removed their offices to 48, Bedford-square, W.C. 1, their late offices having been commandeered for War purposes.

The Institute of Builders have also removed to the above address owing to the Government having commandeered their previous offices.

The telephone number of both bodies is now Museum 3432.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	11	11	11	11	11	10½	10	8	8	8
Accrington	11½	11½	11	9½	9	10	9½	7	7	7
Altrincham	1/2	1/2	1/3	1/2	1/-	1/1	1/3	10	11	10
Ashton-under-Lyne	1/1	1/2	1/1½	1/1	1/1	1/2	1/3	9½	10	10
Barnsley	1/0½	11½	11½	1/-	1/-	1/-	9½	9½	9½	9½
Barrow-in-Furness	1/2	1/2	1/2	1/2	1/2	1/2	1/1½	1/-	1/-	1/-
Barry	1/-	1/-	1/-	1/-	—	1/-	11	9	9	9
Bath	11½	11½	11½	11	11	11½	10½	9	9	9
Bedford	11	11	11	11	11	11	9	9	9	9½
Birkenhead	1/2	1/2	1/2	1/1	1/1	1/3	1/2	10½	10½	10½
Birmingham	1/1½§	1/1½§	1/1½§	1/1½§	1/1½§	1/1½§	1/0§	10½§	10½§	10½§
Bishop Auckland	11	11	11	11	1/2	11	10	8	8	8½
Blackburn	1/1	1/1½	1/1½	11	1/0½	1/1½	1/-	8½	9	9
Blackpool	1/-	11	1/2	9½	8½	9½	10½	6	6	6
Bolton	1/1	1/2	1/2	11½	1/0½	1/2	1/3	7½	8½	10
Bournemouth	11	11	11	11	11	11	10½	8½	8½	8½
Bradford	1/2½	1/2½	1/2	1/2½	1/2½	1/3	1/1	1/-	1/-	1/-
Bridgwater	10	10	10	10	10	10	8½	7	7	7
Brighton	1/-	1/-	1/-	1/1½	1/-	1/-	10½	9½	9½	9½
Bristol	1/2½	1/2½	1/2½	1/2½	—	1/2½	1/1½	11½	11½	11½
Burnley	1/0½	1/0½	1/0½	1/-	1/-	1/2	1/-	7	7½	7½
Burton-on-Trent	11	11	11	11	11	11	10½	8½	8½	8½
Bury	1/2	1/2	1/2	1/1	1/1	1/2	1/3	10	10½	10½
Cambridge	11	10½	10½	10½	10½	11	9	7½	7½	7½
Cardiff	1/1½	1/1½	1/1½	1/1½	1/1½	1/2½	1/0½	10½	10½	10½
Chatham	10	10	10	10	10	10	8½	7	7	7
Chelmsford	8	7½	8½	9	—	7½	6½	5	5	6½
Cheltenham	9½	9½	9½	9½	—	9½	9½	6½*	6½*	6½
Chester	11½	1/-	1/-	1/-	1/-	1/-	11	7½	8½	8½
Chesterfield	1/-	1/2	1/-	11	10	11	1/-	8-8½	8-8½	8-8½
Colchester	10	10½	10½	11	10	11	8½	7½	7½	7½
Coventry	1/2	1/2	1/2½	1/2	1/2	1/2½	1/1	11½	11½	1/0½
Crewe	9	9½	10	10½	10	9½	10	7	7	7½
Darlington	1/1	1/1	1/1	1/1	1/2	1/-	1/-	10	10	10
Derby	1/-	1/-	1/-	1/-	1/-	1/-	11½	9	9	9½
Doncaster	10½	1/-	1/-	10½	10½	10	9½	9½	9½	9½
Dudley	9½	1/-	1/-	10	10	9½	8½	9	9	9½
Durham	10½	10½	10½	10½	10½	9½	9	7½	7½	7½
East Glam. and Mon. Valleys	10	10	10	10	—	—	9	7	7	7
Exeter	10	10	10	10	10	10	9	8	8	8
Folkestone	1/-	1/-	1/-	1/-	1/-	1/-	10	9	9	9
Gloucester	10½	11	11	10½	10½	11	10	8½	8½	8½
Grantham	9½	10	9½	9½	10	8½	8	8	7½	8
Grays	—	1/-	1/-	—	—	1/-	10½	—	10	10
Grimsby	11½	1/-	1/-	1/-	1/-	1/-	10	10	10	10
Great Yarmouth	10	10	10	10	10	10	8½	7	7	7
Halifax	1/1½	1/1½	1/1½	1/1½	1/1½	1/2	11	10½	10½	10½
Harrogate	10½	9½	11	9	8	1/-	9½	7½	7½	7½
Hartlepools	1/2	1/2	1/2	1/2	1/2	10½	1/-	11	11	11
Hastings	10	10	10	10	10	10	8½	7	7	7
Hereford	10	10	10	10	10	10	9	7½	7½	7½
Huddersfield	1/2½	1/3½	1/3	1/-	1/-	1/2	11	11½	11½	11½
Hull	1/3	1/3	1/3	1/3	1/3	1/3	1/1½	1/1	1/1	1/1
Ipswich	1/-	1/-	1/-	1/0½	1/-	1/0½	10½	9½	9½	9½
Lancaster	1/-	1/-	1/-	1/-	1/-	1/-	1/-	9	9	9
Leamington Spa	10½	10½	10½	10½	10½	10½	9½	7½	7½	7½
Leeds	1/2½	1/2½	1/2	1/2	1/2	1/3	11½	11½	11½	1/-
Leicester	1/1	1/1	1/1	1/1	1/1½	1/1	11½	10½	10½	11
Lincoln	10½	1/-	10½	10½	10½	10½	10	9½	9½	9½
Liverpool	1/2	1/2	1/2	1/2	1/1½	1/3	1/1½	10½	10½	10½
Llanelly	1/1	1/1	1/1	1/1	1/1	1/3	11½	10½	10½	10½
London	1/3½	1/3½	1/3½	1/3½	—	1/3½	1/0½	11½	11½	11½
Loughborough	10	10	10½	10	10	10	9	8½	8½	9½
Luton	10½	10½	10½	11½	10½	11	9½	8	8½	9
Maidstone	11	11	11	10	10	11	10	8	8	8
Manchester	1/3	1/3	1/3	1/3	1/2	1/4	1/3	11	11½	11½
Mansfield	11	11	10½	11	11	10½	11	8	8	8
Merthyr Tydfil	11	11	11	11	11	11	10	8½	8½	8½
Middlesbrough	1/2	1/2	1/2	1/2	1/2	1/2	1/-	11	11	11
Newcastle-on-Tyne	1/2	1/2	1/2	1/2	1/2	1/1	1/1	11	11	11
Newport, Mon.	11½	11½	11½	11½	11½	1/2	10½	8½	8½	9½
Northampton	1/-	1/-	1/-	1/-	1/-	1/-	11	9½	9½	9½
Norwich	10½	10½	10½	10½	10½	10½	9½	8	8	8
Nottingham	1/2½	1/2½	1/2½	1/2½	1/2½	1/3	1/1½	1/0½	1/0½	1/0½
Oldham	1/1	1/-	1/2	1/2	11	1/2	1/3	10½	10½	11
Oxford	11	10½	10½	10½	10½	10½	9½	8	8	8
Plymouth	1/2*	1/2*	1/2*	1/2*	1/2*	1/2*	8½*	8½	8½	8½
Pontypridd	11	11	11	11	11	11	10	8	8	8
Portsmouth	1/-	1/-	1/-	1/-	1/-	11	10	9½	9	9½
Preston	1/-	1/0½	11½	1/-	1/-	1/-	11½	8½	9	8½
Reading	10½	10½	10½	11	10½	10½	9	7½*	7½*	7½*
Rochdale	1/2	1/2	1/2	1/1	1/1	1/2	1/3	10½	10½	1/1
Rochester	10	10	10	10	10	10	8½	7	7	7
Rugby	1/-	1/-	1/-	1/0½	1/1	1/-	11	9	9	10
St. Albans	10	10	10	10	10	10	9	8	8	8½
St. Helen's	1/2	1/2	1/2	1/2	1/2	1/2	1/1	8	8	8
Scarborough	9½	9*	9	9½	9½	9½	8‡	9	9	9
Sheffield	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/1½	11½	11½	11½
Shrewsbury	8½	11½	1/3	9½	—	8½	7	8½	8½	9½
Southampton	1/0½	1/0½	1/0½	1/0½	1/0½	1/0½	11½	9½	9½	8
Southend-on-Sea	10	10	10	10	P'cework	10	9	8	8	10
Southport	11½	11	11½	11	11	1/1	1/1	10	10	11
South Shields	1/2	1/2	1/2	1/2	1/2	1/1*	1/1	11	11	10
Stockport	1/2	1/1½	1/2½	1/-	1/1½	1/2	1/3	10	10	11
Stockton-on-Tees	1/2	1/2	1/2	1/2	1/2	10½	1/-	11	11	8½
Stoke-on-Trent	11½	11½	11½	11½	—	10½	10½	8½	8½	7½
Stroud	9½	9½	9½	9½	9½	9½	9	7½	7½	11
Sunderland	1/2	1/2	1/2	1/2	1/2	1/1½	1/1	11	11	10½
Swansea	1/1½	1/1½	1/1½	1/1½	1/1½	1/2	1/1	10½	10½	7½
Taunton	10	10	10	10	10	10	9	7½	7½	8
Torquay	10	10	10	10	10	10	10	8	8	9½
Wakefield	10	1/-	11½	1/-	1/-	1/1	1/-	9½	9½	11½
Walsall	1/1½	1/1½	1/1½	1/1½	1/1½	1/1½	1/-	11½	11½	11½
Warrington	1/3	1/3	1/3	1/3½	1/3½	1/3	1/2	11	11½	8
West Bromwich	11	11	10½	10½	—	10	9	8	8	10
Wigan	1/1½	1/2	1/1½	1/1½	1/0½	1/1½	1/3	10	9	9
Windsor	1/-	1/-	1/-	1/-	1/-	1/-	10½	9	9§	10½
Wolverhampton	1/-§	1/-§	1/-§	1/-§	1/-§	1/-§	10½§	9§	10½	9½
Worcester	9½	1/-	1/-	1/-	1/-	1/-	10	10½	9½	9½
York	1/-	1/-	1/-	1/-	1/-	10½	9½	9½	9½	9½

The Masons' rate given is for bankers; fixers usually ½d. per hour extra.

* War bonus of 2s. per week granted. † War bonus of 3s. per week granted. ‡ War bonus of 3s. 6d. per week granted.
| War bonus of 6s. per week granted. § 1½d. per hour extra for men engaged on munition work.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ASHTON.—The Ashton Corporation Housing Committee have adopted a scheme for the erection of 1,000 new houses immediately the war is over.

BATH.—Drainage plans approved: 4 & 5, The Sawclose; 6, New King-street; and Pulteney-mews. The Council has also approved of the following plans: Temporary shed at Midland Goods Yard; alterations, 39, Southgate-street; sanitary conveniences at Wessex Drill Hall; Carbide Store at Victoria Bridge-road; extension of Pattern Stores, Westmoreland Station-road; bathroom, 6, Camden-crescent; bathroom and sanitary convenience, 6, New King-street; public lavatories, 21, Westgate-street.

BOURNEMOUTH.—Plans passed by T.C.: Garage, "Bassenfalls," No. 30, Marlborough-road, for Colonel Ord; store, &c. (re-erection), Cranmer-road, for Messrs. C. Pike & Son; additions, No. 4, "Pinehurst," Harvey-road, for Mr. J. W. Markham; additions, rear of 275 Christchurch-road, Pokesdown, for Mr. J. R. Edge, combe; additions, Bright's Stores, rear of Gervis-place for Messrs. Bright's, Ltd.; alterations, No. 13, Undercliff-road, Boscombe, for Mr. C. Hunt; additions, "Shackenhurst," McKinley-road, for Captain H. V. W. Stratford; additions, Hygienic Laundry, Gladstone road, for Mr. W. Sheffield; alterations, 46 and 48, Seabourne-road, for Mr. W. P. Lawrence; additions to sheds, Rutland-road, Charminster, for Messrs. Worms & Co.; alterations, cinema, operating box, Westover Rink, for Messrs. Westover Syndicate.

BEDFORD.—At a recent meeting of the R.D.C., the Clerk submitted a list of works hung up by the war. Among them were works of water-supply at Cople, Kempston, New Fenlake, Clapham, Willington, Barford, Roxton, Colmworth, the Wilden-Ravensden comprehensive scheme, and the Sharnbrook-Souldrop combined scheme. Also sewerage works and housing schemes in a number of villages. The Council appointed a Committee to consider these suggestions. The Streets and Buildings Committee of the T.C. recommended the following plans be approved: Motor house, York-street, Mr. H. J. Jones, for Mr. William Jelly; canteen, amended drainage, Lynton Works, Mr. K. Gammell, for Messrs. W. H. A. Robertson & Co., Ltd.; manure store, Duck Mill-lane, for Mr. A. Nightingale (temporary for three years); coal shed at rear of 49, Hurst-grove, for Messrs. W. H. Allen, Son & Co., Ltd. (temporary for five years).

CARDIFF.—Plans passed by T.C.: Alterations, 21, Peel-street; additional accommodation, Avana Flour Mills; store, &c., Celtic-corridor; workshop or garage, 86, Richmond-road; alterations, 27, Oakfield-street; motor shed, rear of 41 & 42, Harrowby-street.

CARMARTHEN.—The T.C. has instructed the city engineer to report on the sites available for the erection of workmen's dwellings in the city.

CARNARVON.—Plans passed by T.C.:—Stable and piggeries, Highfield, for Mr. D. T. Lake; shed, 6, Eleanor-street, for Mr. D. Daniel.

CHELTENHAM.—The Streets Committee is considering the question of installing machinery for making concrete blocks for building purposes. The Borough Engineer has been authorised to visit Chepstow to inspect the workmen's cottages being built there.

DERBY.—Derby T.C. has decided to make application to the L.G.B. for authority to prepare a town planning scheme.

DUDLEY.—Plans of the proposed Bean Maternity Hospital, the gift of Mr. Alderman Bean, have been approved by the Health Committee. Plans passed:—Motor garage, Lantern-row, Dudley Wood, for Mr. T. Price; dwelling house, Oakham-road, for Mrs. A. Ruston; alterations to works, Trindle-road, for Messrs. J. & A. Hillman.

GREENWICH.—Plan passed by B.C.: Sanitary accommodation, 29, Vanbrugh-hill, for the British Domolac Co.

HACKNEY.—Amhurst Park, Hackney, is to be fitted up for use as a V.A.D. hospital, the cost of which will be borne by the Maharajah of Nepal. The B.C. has received applications for permission to carry out the following works:—Sanitary accommodation, &c., and drainage works at Amherst Works, Northwold-road, for Mr. D. P. Hayworth; addition at rear of warehouse premises, 8, Arcola-street, for Mr. M. Miller; sanitary accommodation, 7, Urswick-road, for E. A. Roome & Co.; workshop and sanitary accommodation at factory premises, 5, Urswick-road, for Mr. R. B. Allen; temporary rest-hut (for the Girls' Friendly Society), Mare-street, for Mr. A. Monk; worshop and store shed at 84, Gainsborough-road.—Applications have also been received for permission to execute drainage works as follows:—7 and 8, Manor-place, for Mr. J. Rawlings; 6, Queensdown-road, for Messrs. J. E. Bowden & Sons; 16, Warwick-villa (Homerton), for Mr. A. Noe; 57 and 59, Marlow-road, for Mr. G. Spalding.

HALIFAX.—Plans passed by the B.C.:—Wilson Richardson & Ernest Richardson, external coal place, Dudwell-lane; Sam Henry Ambler, alterations to Old Bar House, The Hough, Stump Cross; John Holdsworth & Co., porch and verandah, Shaw House, Shaw Hill; Charles Henry Horner, pig cotes and corn store, Trimmingham-lane; C. L. Townsend, sanitary accommodation, 54, Savile Park-street; John W. Sutcliffe, pig styes, coal place and goux closet, Popples Farm; Wm. Asquith, Ltd., drainage scheme, Highroad Well; Harry Barraclough, sanitary accommodation, The Nook, Limes-avenue; J. W. Greenwood, motor garage, Queen's Gate; Allan Haigh & Co., Ltd., electric substation, Winding-road; Lawrence Bland, offices, stores and builder's works, Foundry-street North; H. Hodgson Wright, pig stye, Savile-place.

HELMSLEY.—The Helmsley R.D.C. has decided to appoint a special committee to consider the official reports with regard to the provision of working class houses for the district.

HEYBRIDGE.—The Essex C.C. has decided to repair the wharfing supporting the main road from Heybridge to Totham with concrete at a cost of £100.

ILKESTON.—Plan passed: Extension of shed, Wood-street, for Messrs. S. Fletcher & Sons.

NORTHAMPTON.—Plans passed:—Additions to factory, Kingsthorpe-road, for The Advance Motor Co., Ltd.; new bathroom, No. 28, Louise-road, for Mr. H. Field; temporary last store, Perry-street, for Messrs. Crockett & Jones; store, Stimpson-avenue, for Messrs. Sears & Co., Ltd.; extension to bakery, St. James' Park-road, for Messrs. Gandy & Co.; extension to warehouse, Overstone-road, for Messrs. G. T. Hawkins, Ltd.

OSSETT.—Plans passed by T.C.: Bathroom, &c., Wesley-street, for Mr. H. H. Craven; tower and water tank, Ings Mill, for Messrs. Mitchell & Co.

PLYMOUTH.—Plans passed by T. C.:—Alterations and additions, 100, 101 and 102, Union-street, for the Young Men's Christian Association; scullery, 4, Seymour-terrace, Lipson-road, for Mr. W. T. Cundy; gallery, Palladium, St. Leven-road, for Messrs. Prance & Friedman; bathroom, &c., 2, Saltram-place, for Mr. Whittaker, Mr. C. Cheverton has been instructed to submit sketch plans for a three-storied extension of the Devonport Technical School.

PORTADOWN.—The Portadown U.C. has decided to make application to the proper authorities for the establishment of a potato flour mill in Portadown.

ROTHERHAM.—The R.D.C. has decided to proceed without delay with comprehensive town planning schemes in the most likely parts of the district.

SALFORD.—Plans passed by the T.C.:—Alterations and additions to canteen store, premises, Wellington-street, Salford; licensed premises, Florin-street and Albert-street, Pendleton; offices, premises, Carey-street and Long-street, Broughton; construction of additional sanitary accommodation, premises, Orsdall-lane, Salford; temporary building, Hugh Oldham-drive, Broughton. The T.C. has decided to buy a plot of land near the Crescent and Acton-square for the erection of a building for technical instruction and continuation education.

SOUTH SHIELDS.—The Housing and Town Planning Committee of the South Shields T.C. recommend the erection of 700 new dwelling houses of four rooms or more.

TOTTENHAM.—A plan for the erection of a factory in Town-road, by Messrs. Harding, Wall & Creischera has been approved.

* See also our list of Competitions, Contracts, &c., on next column.

Competitions, Contracts, &c.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

BUILDING AND PAINTING.

APRIL 15.—**Stockton.**—PAINTERS' WORK.—The Guardians require certain painters' work done at the Children's Homes in Hartington-road. Particulars from Mr. John Bell, Clerk to the Guardians, Stockton-on-Tees.

APRIL 17.—**London.**—PAINTING, &c.—The Metropolitan Asylums Board invite tenders for painting and repairs at the Brook Ambulance Station, Shooter's-hill, S.E. Specifications by Mr. T. Cooper, M.Inst.C.E., M.I.Mech.E., Acting Engineer-in-Chief, at the office of the Board, Embankment, E.C. 4. Deposit, £1.

APRIL 18.—**Durham.**—PAINTING.—For outside painting at certain County Police Stations. Specifications, &c., at the County Surveyor's Office, Shire Hall, Durham.

*APRIL 30.—**Menai Bridge.**—PAINTING.—The Commissioners of H.M. Works and Public Buildings invite tenders for the painting of the Menai Bridge, North Wales. Forms of tender, &c., can be obtained on application to the Chief Engineer at H.M. Office of Works, Storey's Gate, London, S.W. 1, or to the Bridge Keeper at the Menai Bridge.

ENGINEERING, IRON AND STEEL.

APRIL 24.—**Manchester.**—WIDENING OF VIADUCT.—Manchester Corporation Electricity Committee invite tenders for the widening of the railway viaduct from Stuart-street to Bank-street, Clayton. Plans, &c., at the City Engineer's Office, Town Hall, Manchester. Deposit, £2 2s.

Auction Sale.

*APRIL 17.—**Whitstable.**—Messrs. Geering & Colyer will sell on the premises, Tankerton Works, Clare-road, Whitstable, surplus builder's stock, including large quantity timber, ironmongery, heavy spring van, &c. On view day prior to and morning of sale. Catalogues on the premises and of the auctioneers at Ashford and Rye.

NEW COMPANIES.

The particulars quoted below have been compiled by Jordan & Sons, Ltd., Company Registration Agents, of 116 & 117, Chancery-lane, W.C. 2, from the documents available at the Companies Registry:—

IRVIN & SELLERS, LTD. (1,491,823). Registered March 9. To carry on the business of timber merchants and saw millers, &c. Nominal capital, £50,000 in 35,000 £1 Ordinary Shares and 15,000 £1 Preference Shares.

SQUIRE & POTTER, LTD. (149,962), 17, Walton-street, Chelsea, S.W. 3. Registered March 23. To carry on the business of builders and decorators, &c. Nominal capital, £5,000 in 5,000 £1 shares.

JOHN WRIGHT & SONS (VENEERS), LTD. (149,945), Arlington Wharf, Arlington-street, New York-road, N. 1. Registered March 22. To carry on the business of veneer manufacturers, merchants and importers and timber merchants, &c. Nominal capital, £70,000 in 20,000 £1 preference shares and 49,984 £1 ordinary shares and 16 £1 founders' shares.

"Fuel Economy in Cooking Apparatus.

Owing to pressure on our space, we are unable to give any part of Mr. A. H. Barker's second lecture on "Fuel Economy in Cooking Apparatus" this week. We hope to give the first instalment of Lecture II. in our next issue.

FREEMAN'S IMPROVED ROOF TRUSS

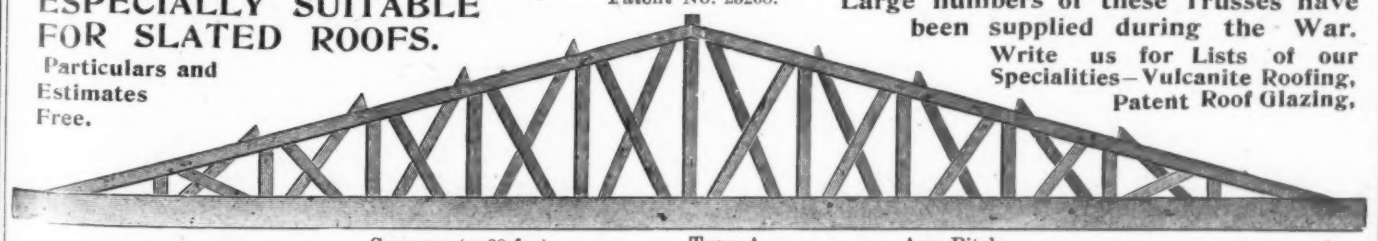
ESPECIALLY SUITABLE FOR SLATED ROOFS.

Particulars and Estimates Free.

Patent No. 23268.

Large numbers of these Trusses have been supplied during the War.

Write us for Lists of our Specialities—Vulcanite Roofing, Patent Roof Glazing.



Span up to 80 feet. Type A. Any Pitch.

FREEMANS, Roofing Contractors,

CARTWRIGHT STREET, WOLVERHAMPTON.

Telephone—WOLVERHAMPTON 171

Telegrams—'ROOFING,' WOLVERHAMPTON

TRADE ORGANIZATION DEVELOPMENT.

We have received the following communication from the Ministry of Reconstruction :—

A conference, which is to take place between trade representatives and Government representatives in the Saddlers' Hall, London, on April 12, will mark a new point in the process of trade organization, to which the country is now giving so much attention. On behalf of the Government, three Ministries will be represented by their respective Ministers: Dr. Addison, Minister of Reconstruction; Mr. C. H. Roberts, Minister of Labour; and Mr. Hayes Fisher, President of the Board of Trade. The trade immediately concerned on this occasion is the made-up leather goods and belting industry, and representatives both of employers and of employed will be present.

The object of the meeting is to promote the formation, for this particular industry, of an "Interim Industrial Reconstruction Committee," and the movement is of interest to people of other trades because this committee. it is hoped, will be the first of many similar committees, to be formed by such trades and industries of the country as cannot see their way clear to forming at once a full Industrial Council for their trade on the lines recommended in the first Whitley Report. The Interim Industrial Reconstruction Committee is to serve as a stepping-stone or half-way house to the full Industrial Council status.

The first Whitley Report, it will be remembered, advocated a Joint Standing Industrial Council for each trade, but this recommendation was regarded as practicable only in such trades as had attained a considerable degree of industrial organization as regards both employers and workers. Interim Industrial Reconstruction Committees are now advocated for such industries and trades as have not attained so complete a degree of organization and also for more highly organized trades in cases where there are difficulties in the way of forming Joint Standing Industrial Councils. They are intended to serve temporarily some of the functions allotted to Industrial Councils, but they have also one added function of great importance, namely, to promote organization both of employers and of employed in their industry until each side has reached that degree of organization which will admit of full Industrial Councils being formed. They are to give their attention also to other urgent problems which, in the case of more fully organized industries, will be dealt with by Industrial Councils. Among these problems are all the many trade difficulties embraced under the general head "demobilization" and the re-absorption into industry of men from the various branches of national service at home and abroad; also the problems that will arise from the shortage of raw materials and the general shortness of money. They will be asked to consider also such questions as new industries, the proper disposal of Government surplus stores, and other questions affecting the general welfare and prosperity of their industries.

But the great function of Interim Industrial Reconstruction Committees will be to bring about, each within its own industry, that degree of organization both on the part of the employers and on the part of the workers, and jointly on behalf of both, which will make possible the establishment for that trade of a full Industrial Council which can speak for its trade with one voice, act for it with the unanimous support of all its members.

House Painting.

A War Cabinet Priority Committee has been set up to deal with building schemes which are urgently needed in certain industrial districts to make good the growing difficulties of housing. The Committee, it is stated, is met at every turn by the paramount need of economy in the use of building labour and materials. It is strongly urged that great relief would be afforded by the postponement of the painting and redecoration of houses, which forms an important part of the national spring-cleaning. If householders resolved to forgo what in many cases is regarded as an annual renovation, they would make available more of the scanty supply of labour for necessary building work of national importance.

PATENTS.

APPLICATIONS PUBLISHED.*

112,764.—Reginald Francis Sedgley: Ratchet wrench or brace.

113,472.—William Walden: Fire-escapes.

113,475.—William Bell, Arthur Monte Callow, and Charles Melville Ferguson: Ventilating shafts.

113,479.—Gilbert Cecil Pillinger and Leo Sunderland: Automatic control of electric generating sets for emergency or stand-by purposes for ships, public buildings, and for other purposes.

113,487.—Charles Price and Frederick Charles Price: Attached road scarifiers.

113,514.—Herbert Jeffery Palmer: Tiling or slating for building purposes.

113,521.—John Shanks.—Flushing apparatus for water-closets.

113,546.—Alexander William Stewart: System of ventilation.

113,552.—Raymond Ray Lanier: Apparatus for raising water.

113,553.—James Slater & Co. (Engineers), Ltd. and Lionel Augustus Mitchell: System of steam heating for rooms or buildings, and apparatus therefor.

113,579.—Fred Franklin Benson: Ties fo wire fences.

113,580.—Samuel Rowland Parkes: Door lockr furniture.

113,582.—Harold Wills Porter and Frederick William Sanders: Domestic fireplaces.

113,638.—Thomas Gregorie Tulloch: Fluid tight joints for steam pipes.

113,644.—George Edward Clare: Kitchen ranges and means combined therewith for warming houses and the water supply thereof.

113,664. — George Plummer Campbell Building buildings of cement or like concrete.

113,669.—James Alexander Main: Concrete slabs for roofing and similar purposes.

* All these Applications are now in the stage in which opposition to the grant of Patents upon them may be made.

REASONS WHY! Number Two.

Calno Reg.d does not need papering. Excellent results by painting or distempering. This is another reason why Calno is making a Special Appeal at present time when Paper is so scarce.

THE BRITISH FIRE-RESISTING BUILDING BOARD—DOES NOT CRACK OR FALL.

SAMPLES AND PRICES FROM

THAMES MILLS, PURFLEET, ESSEX.

Telephones: Rainham 22, Tilbury 11. Telegrams: "Boards, Purfleet."

N.B.—Owing to difficulties in manufacturing, we shall be unable to accept Orders unless the material is required for work of NATIONAL IMPORTANCE.

PRICES CURRENT OF MATERIALS.

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry—Ed.]

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1,000 Alongside, in River Thames.	£ s. d.
Best Stocks	2 10 0
Picked Stocks for Facings	3 5 0

Per 1000, Delivered at Railway Depot, London.

	£ s. d.		£ s. d.
Flettons	2 3 0	Best Blue Pressed Staffordshire	6 10 0
Best Fareham Red	4 0 0	Do. Bullnose	6 15 0
Best Red Pressed Ruabon Facing	6 0 0	Best Stourbridge Fire bricks	9 5 0
GLAZED BRICKS—			
Best White, Ivory, and Salt Glazed Stretchers	14 17 6	D'ble Str'tch'rs	20 7 6
		D'ble Headers	17 7 6
		One Side and two Ends	21 7 6
Headers	14 7 6	Two Sides and one End	22 17 6
Quoins, Bullnose and 4½in. Flats	18 7 6	Splays and Squints	19 17 6

Glazed bricks priced at so much each, 25 per cent. advance on list.

Second Quality, £1 per 1,000 less than best.

	s. d.	
Thames Ballast	10 0	per yard, delivered
Pit Sand	12 6	
Thames Sand	13 6	,, ,, 2 miles
Best Washed Sand	14 0	,, ,, radius
¾ in. Shingle for Ferro-Concrete	12 0	,, ,, Paddington.

Per ton, delivered.	£ s. d.		£ s. d.
Best Portland Cement	2 15 0	..	2 18 0

Do. £2 11s. 0d. alongside in 80-ton lots.
Ferrocrete 2s. 6d. per ton extra on above.
Best Ground Blue Lias Lime 1 13 6 at rly. depot.
NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 3d. each and credited at 2s. each if returned in good condition within three months.
Grey Stone Lime ..... 47s. 0d. per ton delivered.
Stourbridge Fireclay in s'cks 37s. 6d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	1 7
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	1 8½
Do. do. delivered on road waggons at Nine Elms Depot	1 9½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L.& S.W.R., South Lambeth Station, G.W.R., and Mileage Station G.W.R., per ft. cube	2 10½
Do. do. delivered on road waggons at above stations, per ft. cube	2 11½

White basebed, 2d. per ft. cube extra.
NOTE.—½d. ft. cube extra for every foot over 20 ft. *average.*

RANDOM BLOCKS—Per Ft. Cube, delivered at Rly. Dpot.

	s. d.		s. d.
Ancaster in blocks	2 0	Closeburn Red	
Beer in blocks	1 7½	Freestone	2 2
Grinshill in blocks	2 4	Red & White Mansfield random block	2 9
Darley Dale in blocks	2 5	Yellow Magnesian Limestone do. do	3 3

YORK STONE—*Robin Hood Quality.*

Delivered at any Goods Station London.	s. d.
Scappled random blocks ..... Per Ft. Cube	3 11
6 in. sawn two sides landings to sizes (under 30 ft. super.) ..... Per Ft. Super	3 0
6 in. rubbed two sides, ditto ..... ,,	3 4
3 in. sawn two sides slabs (random sizes) ,,	1 3½
2 in. to 2½ in. sawn one side slabs (random sizes) ..... ,,	0 10
1½ in. to 2 in. ditto, ditto ..... ,,	0 8½

HARD YORK—
Delivered at any Goods Station London.

	s. d.
Scappled random blocks ..... Per Ft. Cube	3 6
6 in. sawn two sides landing to sizes (under 40ft. super.) ..... Per Ft. Super	2 8
6 in. rubbed two sides ditto ..... ,,	2 4
3 in. sawn two sides slabs (random sizes) ,,	1 3
2 in. self-faced random flags ..... ,,	0 5½

TILES.

Per 1,000 f.o.r. London.	£ s. d.
Best machine-made tiles from Broseley or Staffordshire district	3 15 0
Ditto hand-made ditto	3 17 6
Ornamental ditto	4 0 0
Hip and valley tiles (per dozen)	0 9 0

SLATES.

	Per 1,000 of 1,200 f.o.r. London.	£ s. d.
Best Blue Bangor Slates,	20 by 10	16 10 0
,, ,,	16 by 8	8 10 0
First quality ,,	20 by 10	16 0 0
,, ,,	16 by 8	8 2 6
Best Blue Portmadoc	20 by 10	16 10 0
,, ,,	16 by 8	8 10 0
First quality ,,	20 by 10	15 5 0
,, ,,	16 by 8	7 12 6

WOOD.

BEST BUILDING REDWOOD. Imported sizes.
Deals: 4 in. by 12 in., 4 in. by 11 in., 3 in. by 11 in., 4 in. by 9 in., and 2 in. by 11 in. ..... 3 in. by 9 in., 2½ in. by 9 in., and 2 in. by 9 in. .....

Softwood stocks controlled by the Director of Materials, consequently prices must be withdrawn

WOOD (*Continued*).

BEST BUILDING REDWOOD.
Battens: 2 in., 2½ in., and 3 in. by 8 in. .....
2 in., 2½ in., and 3 in. by 7 in. .....
2 in., 2½ in., and 3 in. by 6 in. .....
Scantlings: 2 in. by 3 in., 2 in. by 3½ in., 2 in. by 4 in., 2 in. by 4½ in. ... 3 in. by 4 in., and 3 in. by 4½ in. .....
Boards: 1 in., 1½ in., and 1½ in. by 6 in. and 7 in. ¾ in. .....
Seconds .....
Sawn pitch pine logs (about 35 cu. ft. average .....
Do. 6 in. to 10 in. ..
Best Pitch Pine Deals ....
Under 2 in. thick .....

JOINERS' WOOD

White Sea First Quality Red: 4 in. by 11 in... 3 in. by 11 in., and 2 in. by 11 in. .....
4 in. by 9 in. .....
3 in. by 9 in., and 2¼ in. by 9 in. .....
3 in. by 11 in. boards ..
7 in. and 8 in. battens ..
7 in. and 8 in. boards ...
Archangel White Deals—
Best 3 in. by 9 in. and 10 in. and 11 in. .....
Seconds, do. .....
U.S. Battens .....
Prepared Floorings and Matchings. Seconds Swedish Red and equal—
1¼ in. by 6½ in. planed and shot .....
1¼ in. by 6½ in. planed and matched .....
1 in. by 6½ in. planed and shot .....
1 in. by 6½ in. planed and matched .....
¾ in. by 6½ in. planed, matched, and beaded, or V jointed .....
1 in. by 6½ in. do. .....
Columbian or Oregon Pine, best quality .....
Yellow Pine—First regular sizes .....
Oddments .....
Seconds, regular sizes ..
Oddments .....
Kauri Pine—Planks per ft. cube.....

Softwood stocks controlled by the Director of Materials, consequently prices must be withdrawn.

Dry Wainscot Oak, per ft. super, as inch	0	2	0	..	0	2	6
¾ in. do. do.	0	1	6	..	0	2	0
Dry Mahogany—Honduras, Tabasco, per ft. super, as inch	0	2	6	..	0	3	0
Cuba, Mahogany	0	2	6	..	0	3	6
Dry Walnut, American, per ft. super, as inch	0	2	0	..	0	3	0
French, "Italian," Walnut	0	3	0	..	0	5	0
Teak, per load (Rangoon or Moulmein)	60	0	0		85	0	0
Do. do. (Java)							
American Whitewood planks, per ft. cube	1	4	0	..	1	10	0
Glue, per cwt.	6	0	0	..	6	15	0

METALS.

JOISTS, GIRDERS, &c.

Prices controlled by the Ministry of Munitions.

Rolled Steel Joists, ordinary sections, basis price .....
Plain Compound Girders, ordinary sections .....
Plain Compound Stanchions
Angles, Tees, and Channels, ordinary sections .....
Flitch Plates .....
Cast Iron Columns and Stanchions, plain ordinary patterns .....

WROUGHT-IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £4 net value delivered direct from works. 5 per cent. less carriage forward if sent from London stocks.)

	Sizes up to and including 2 in.		Sizes 2½ in. to 6 in.	
	Tubes.	Fittings.	Tubes.	Fittings.
Gas	36½	40	41½	42½
Water	31½	37½	36½	40
Steam	26½	35	31½	37½
Galvanised Gas	13½	32½	17½	35
,, Water	5	30	8½	32½
,, Steam	1½ *on*	27	2½	30

L.C.C. SOIL PIPES— London Prices ex works.

	Pipes coated.	Bends, stock angles.	Branches, stock angles
	s. d.	s. d.	s. d.
2 in. per yd. in 6 fts	3 2	2 4½	2 10½
2½ in. ,,	3 8	2 7½	3 7
3 in. ,,	4 6	2 10½	4 3½
3½ in. ,,	5 0	3 7	5 0
4 in. ,,	5 6	4 1	5 9½

RAIN-WATER PIPES, &c.

	Pipe.	Bends, stock angles.	Branches, stock angles
	s. d.	s. d.	s. d.
2 in. per yd. in 6fts. plain	2 3½	1 4	1 9
2½ in. ,, ,,	2 5	1 7	2 2
3 in. ,, ,,	2 10½	1 11	2 10
3½ in. ,, ,,	3 5½	2 3	3 3
4 in. ,, ,,	3 9½	2 9	4 0

L.C.C. DRAIN PIPES,—9 ft. lengths. London Prices. 4 in., 6s. 3d. .. 5 in., 7s. 9d. .. 6 in., 9s. 2d.

Per ton in London.

	£ s. d.		£ s. d.
IRON—			
Common Bars	16 10 0	to	17 0 0
Staffordshire Crown Bars—good merchant quality	16 10 0	..	17 10 0
Staffordshire "Marked Bars"	17 10 0	..	18 0 0
Mild Steel Bars	19 0 0	..	19 10 0

METALS (*Continued*).

Per ton in London.

	£ s. d.		£ s. d.
Steel Bars, Ferro-Concrete quality, £19 basis price.			
Hoop Iron, basis price	20 10 0	..	21 0 0
,, ,, Galvanised	33 0 0	..	—
(* And upwards, according to size and gauge.)			
Sheet Iron Black—			
Ordinary sizes to 20 g.	22 10 0	..	23 0 0
,, ,, 24 g.	23 10 0	..	24 0 0
,, ,, 26 g.	24 10 0	..	25 0 0
Sheet Iron, Galvanised flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	34 0 0	..	—
Ordinary sizes to 22 g. and 24 g.	34 0 0	..	34 10 0
Ordinary sizes to 26 g.	36 0 0	..	36 10 0
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	35 10 0	..	—
,, ,, 22 g. and 24 g.	36 0 0	..	—
Ordinary sizes to 26 g.	39 0 0	..	—
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	33 0 0	..	—
Ordinary sizes, 22 g. and 24 g.	33 10 0	..	—
Ordinary sizes, 26 g.	32 10 0	..	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	24 10 0	..	—
Best Soft Steel Sheets, 20 g. and 24 g.	24 15 0	..	—
Best Soft Steel Sheets, 26 g.	26 10 0	..	—
Cut Nails, 3 in. to 6 in.	29 0 0	..	30 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.

Delivered in London.

	£ s. d.		
LEAD—Sheet, English, 4 lb. and up	38 10 0	..	—
Pipe in coils	39 0 0	..	—
Soil Pipe	42 0 0	..	—
Compo pipe	42 0 0	..	—

NOTE—Country delivery, 20s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra. Orders for over 1 cwt. Sheet Lead or Pipe, or 28 lbs. Solder should be accompanied by a certificate or licence, which can be obtained from the Director of Materials [A.N.2 (E)], Hotel Victoria, S.W. Smaller quantities than the above can be obtained by making a written declaration to the Manufacturer or Merchant that the metal is wanted for urgent renewals or repairs, and giving the name of the job for which it is required.

COPPER—					
Strong Sheet	per lb.	0	2	2	.. —
Thin ,,	,,	0	2	3	.. —
Copper nails	,,	0	2	2	.. —
Copper wire	,,	0	2	3	.. —
TIN—English Ingots	,,	0	3	3	.. —
SOLDER—Plumbers'	,,	0	1	5	.. —
Tinmen's	,,	0	1	10	.. —
Blowpipe	,,	0	2	0	.. —

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft		Per Ft.
15 oz. fourths	7d	32 oz. fourths	9d.
,, thirds	7½d.	,, thirds	10d.
21 ,, fourths	7½d	Fluted, Obscured and	
,, thirds	8d.	Enamelled Sheet,	
26 ,, fourths	8d.	15 oz.	7½d.
,, thirds	9d.	21 ,,	8½d.

Extra price according to size and substance for squares cut from stock, and only small quantities can be supplied without an A Certificate.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
⅛ Rolled plate	4½d.
3/16 Rough rolled and rough cast plate	5½d.
¼ Rough rolled and rough cast plate	5½d
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	6½d.
Ditto, tinted	7½d.
Rolled Sheet	5½d.
White Rolled Cathedral	5½d.
Tinted do.	6d.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil	in pipes ..... per gallon	0 5 6
,, ,, ,,	in barrels .... ,,	0 5 7
,, ,, ,,	in drums .... ,,	0 5 10
Boiled ,, ,,	in barrels .... ,,	0 5 10
,, ,, ,,	in drums .... ,,	0 6 1

Orders for these oils must be accompanied by a certificate from the Ministry of Food (Oil and Fat Department), St. Stephen's House, Westminster, S.W.1.

Turpentine in barrels	,,	0 10 6
,, in drums	,,	0 10 9
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		53 10 0

GENUINE WHITE LEAD PAINT—

"Blackfriars," "Nine Elms," "Park," and other best brands (in 14 lb. tins) not less than 5 cwt. lots..	per ton delivered	71 10 0
Red Lead, Dry (packages extra) ..	per ton	42 0 0

Orders for White and Red Lead and any Paint containing Lead must be accompanied by a certificate or licence, which can be obtained from the Director of Materials [A.N. 2 (E.)], Hotel Victoria, S.W.

Best Linseed Oil Putty	per cwt.	0 16 0
Filocol	per cwt.	0 13 6

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak	0 12 0
Pale Copal Oak	0 14 0
Superfine Pale Elastic Oak	0 16 0
Fine Extra Hard Church Oak	0 14 0
Superfine Hard-drying Oak, for seats of Churches	0 16 0
Fine Elastic Carriage	0 16 0
Superfine Pale Elastic Carriage	0 18 0
Fine Pale Maple	0 14 0
Finest Pale Durable Copal	1 0 0
Extra Pale French Oil	1 4 0
Eggshell Flatting	1 0 0
White Pale Enamel	1 6 0
Extra Pale Paper	0 14 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	1 10 0
French and Brush Polish	0 16 0

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 12 *noon on Wednesday.*

* Denotes *accepted.* † Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*

BATH.—For supply to the Council of wood paving blocks :—

*T. Burgess & Son ..... £12 10s. per 1,000

BATH.—The following tenders have been accepted by the Council at scheduled prices :—

Smiths' Work.—A. Pursey.
Carpenter's Work.—G. Morris & Son.

BATH.—For supply of timber to the Council :—

*Burgess & Son, Ltd. .... At scheduled prices.

BOURNEMOUTH.—The Health Committee of the Corporation has accepted the tender of Grounds & Newton for masons, paviours and drainage works at 75 per cent. above schedule prices, except as to asphalte repairs, which will be 100 per cent. above schedule prices.

SALFORD.—Accepted by the Highways and Paving Committee for six months' supplies :—

*Baxendale & Co., Ltd, Manchester—	
Earthenware pipes	£236 7 0
Portland cement	326 13 4
*Buxton Lime Firms Co., Ltd., Buxton—	
Limestone chippings	36 15 0
*C. L. Stiff & Co., Ltd., Irlam—	
Stone or slag chippings	46 17 6
*John Needham & Sons, Ltd., Stockport—	
Cast iron materials	384 0 0
*Penmaenmawr and Welsh Granite Co., Ltd., Penmaenmawr—	
Granite for macadam	487 10 0
*Buxton Lime Firms Co., Ltd., Buxton—	
Buxton lime	32 5 0

WOLVERHAMPTON.—For the tar-painting of roads, for the Corporation :—

*Johnson & Co., Mark-lane, London, at 2s. 8d. per super yard.

WOLVERHAMPTON.—The Sewerage Committee of the Corporation has accepted the tender of Doulton & Co., for the supply of pipes for one year.

LONDON.—For execution of paving works for one year, for the Bethnal Green B.C. :—

Name of Firm.	No. of years free maintenance.	Areas ordered together at one time in one street, and in the aggregate exceeding 20 yds., at per yard super.			Areas, including trenches, ordered together at one time in one street, and in the aggregate not exceeding 20 yards, at per yard super.		
		1 in. Mastic.	1½ in. Compressed.	2 in. Compressed.	1 in. Mastic.	1½ in. Compressed.	2 in. Compressed.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
*Val de Travers Asphalte Paving Co., Ltd.	3	—	13 3	15 9	—	13 9	16 6
	5	7 9	—	—	8 0	—	—
The Limmer and Trinidad Lake Asphalte Co., Ltd.	3	—	16 0	18 0	—	17 0	19 0
	5	8 6	—	—	9 6	—	—
The French Asphalte Co., Ltd.	3	—	13 0	15 6	—	14 0	16 6
	5	8 0	—	—	8 6	—	—

LONDON.—For the supply of Portland cement and lime to the Bethnal Green B.C. :—

	Brand of Cement.	Portland Cement.	Prices per ton. Blue Lias Lime.	Grey Stone Lime.
*Bartlett, Sills & Co.	Saxon	£2 15 0	£2 2 6	£2 6 0
J. Byford & Sons	Griffin	2 15 0	2 2 6	2 6 0
Eastwood & Co.	B.P.C.M.	2 15 0	2 2 6	2 6 0
Erith & Co.	Smeed Dean	2 15 0	—	2 6 0
E. R. Burtt & Sons	Tower Bridge	2 15 0	—	2 6 0
J. Knowles & Co.	B.P.C.M.	2 15 3	2 2 6	2 6 0
Associated Portland Cement Manufacturers	A.P.C.M.	2 15 0	2 2 6	2 6 0
British Portland Cement Manufacturers	Saxon	2 13 0	—	—

DERBY.—For construction of extensions to the electric power station for the Corporation :—

*E. Morley & Sons £4,554 10 11

GLASGOW.—For relaying sewers north of Caledonian Railway, for the Corporation :—

*Gray's Ferro-Concrete Contracting Co., Ltd. £1,458

GREENWICH.—For tar-painting roadway, Tunnel-avenue, for the Borough Council :—

*Tarmac, Ltd. £106

NORTHAMPTON.—The Council has accepted tenders from the following for the supply of broken granite and broken slag for the ensuing year :—

Broken Granite.—Ellis & Everard ; The Whitwick Granite Co. ; The Croft Granite Co. ; The Enderby Granite Co. ; The Montsorrel Granite Co. ; B. J. Forder & Sons ; Wm. Griffiths & Co. ; The Midland Quarry Co. ; The Groby Granite Co. ; Chas. Abel, Ltd.

Broken Slag.—The Exors. of Messrs. P. Phipps & Co., Ltd. ; Messrs. T. Butlin & Co.

TO CORRESPONDENTS.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name) ; those relating to advertisements and other exclusively business matters should be addressed to THE BUILDER, LTD., and *not* to the Editor.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

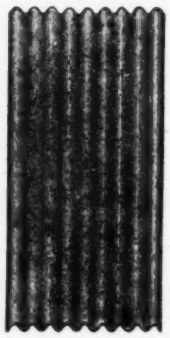
N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

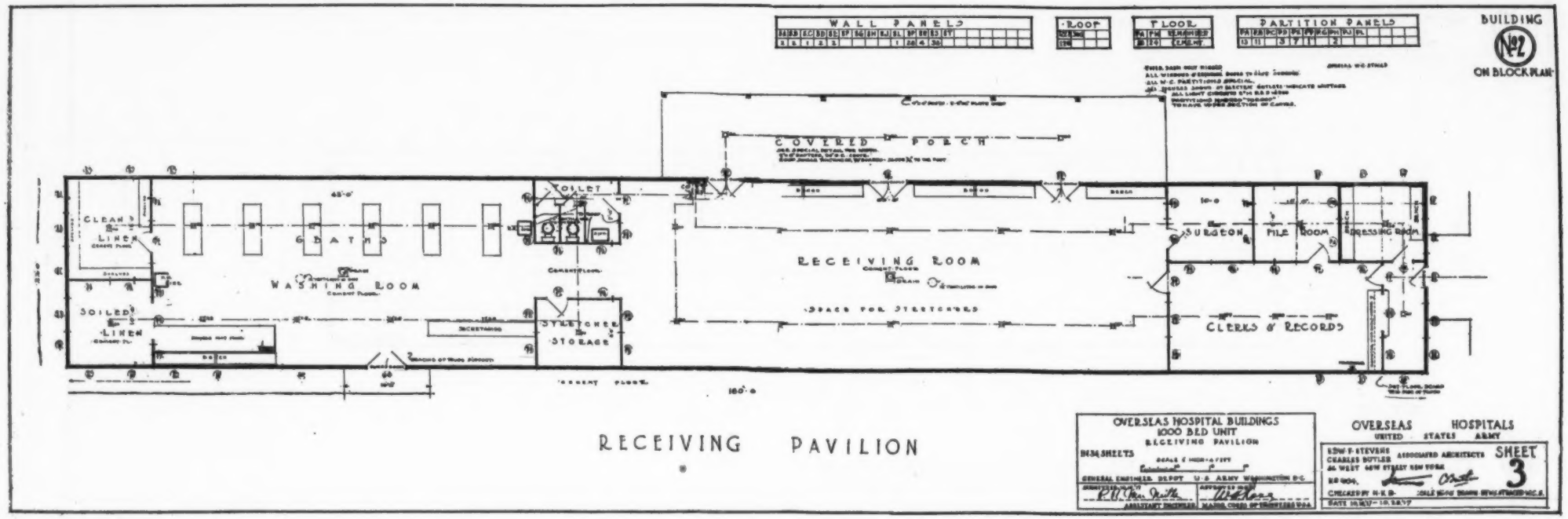
AUSTRIAN and RIGA.
FIRST-CLASS, MILD GRAINED, DRY
WAINSCOT OAK.
J. GLIKSTEN & SON, Ltd.,
Carpenter's Road, Stratford, E.
Telegrams: "Gliksten, Strat, London. *Telephone No.:* Eastern 2771 (2 lines).

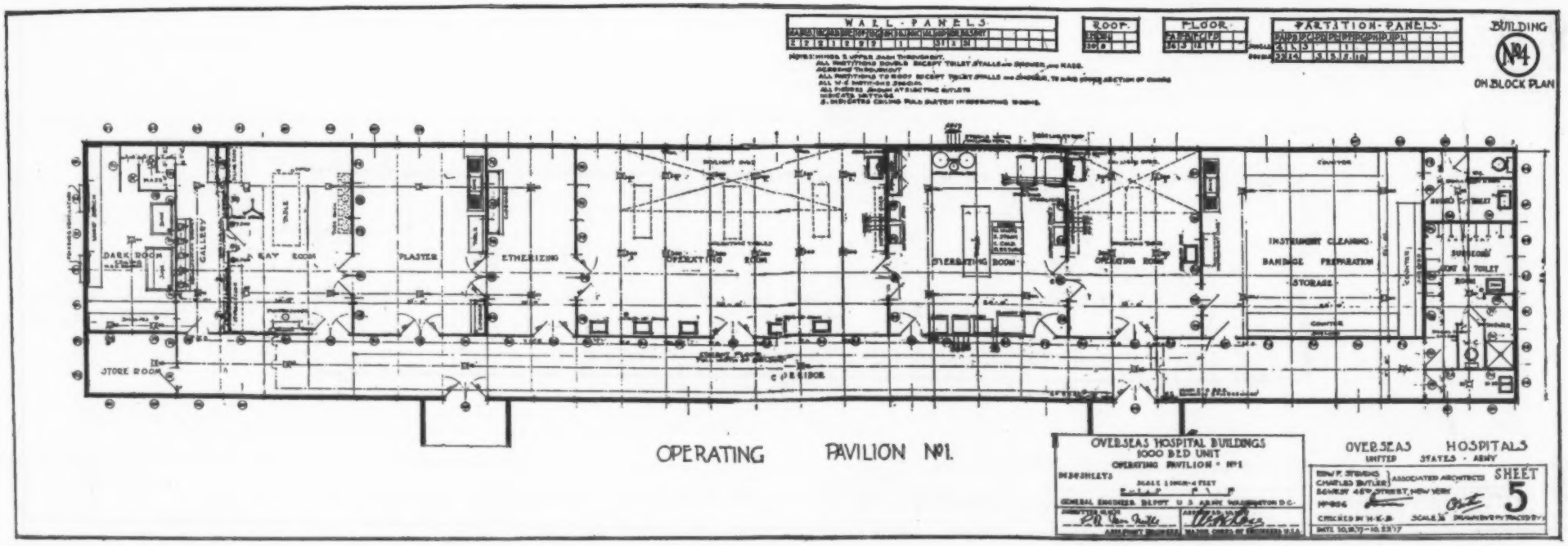
THE LONDON & LANCASHIRE FIRE INSURANCE COMPANY LTD.
Premiums - - £3,269,730
Reserve Funds - £4,010,993
FIRE.
CONSEQUENTIAL LOSS.
ACCIDENTS.
BURGLARY. PLATE GLASS.
EMPLOYERS' LIABILITY.
MARINE.
Head Offices { 45, Dale Street, Liverpool. 155, Leadenhall Street, E.C.

J. J. ETRIDGE, Jr. LTD.
SLATE MERCHANTS,
EXPERTS IN
SLATING, TILING.
STRIPPING AND RELAYING.
Telephone : Avenue 4940 (two lines), or write
Bethnal Green Slate Works,
BETHNAL GREEN, LONDON, E.

Asphalte.—The Seyssel and Metallic Lava Asphalte Co. (Mr. G. F. Glenn), Office, Moorgate Station Chambers, Moorfields, E.C. 2—The best and cheapest materials for dampcourses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to Forth Bridge Co.

GALVANIZED CORRUGATED ROOFING SHEETS
BEST QUALITY
Perfectly and thickly coated with zinc, insuring real durability.

GOOD STOCKS
kept at our London Works in all the usual lengths and gauges.
Prompt delivery *can be given, whether straight sheets or curved to any ordinary radius.*
FREDK BRABY & CO. Ltd. 352 to 364, Euston Road, N.W. 1 / Ida Works, Deptford, S.E. 8 } LONDON.

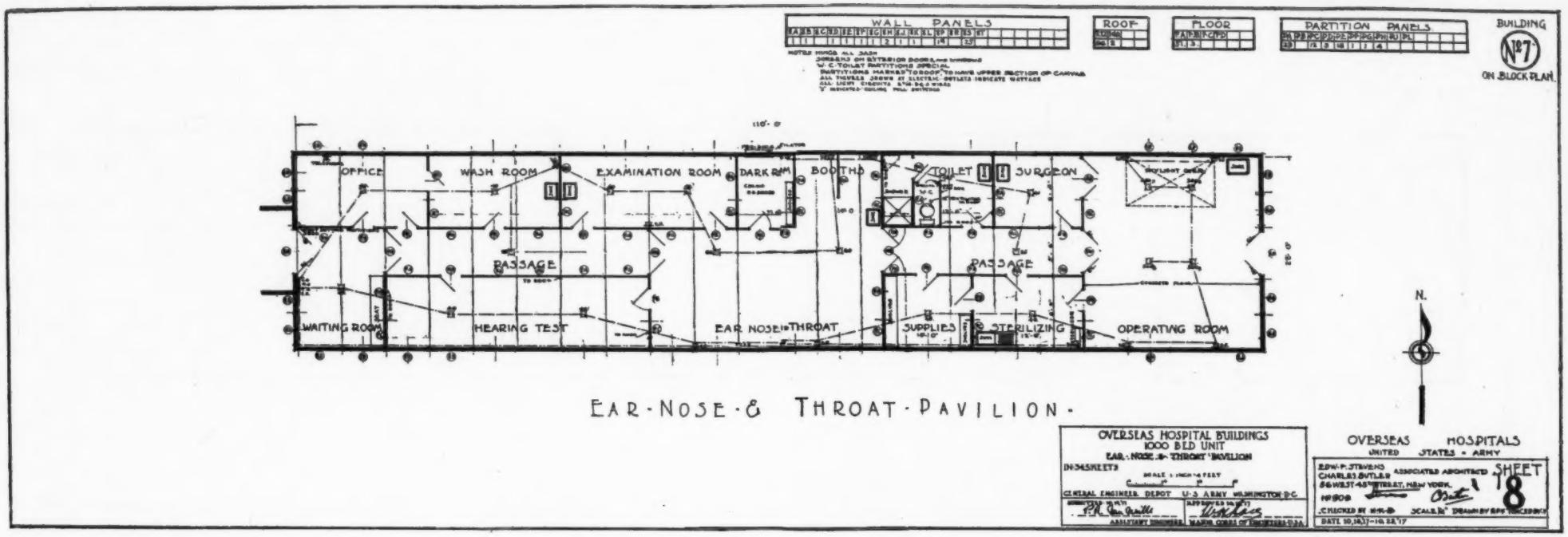


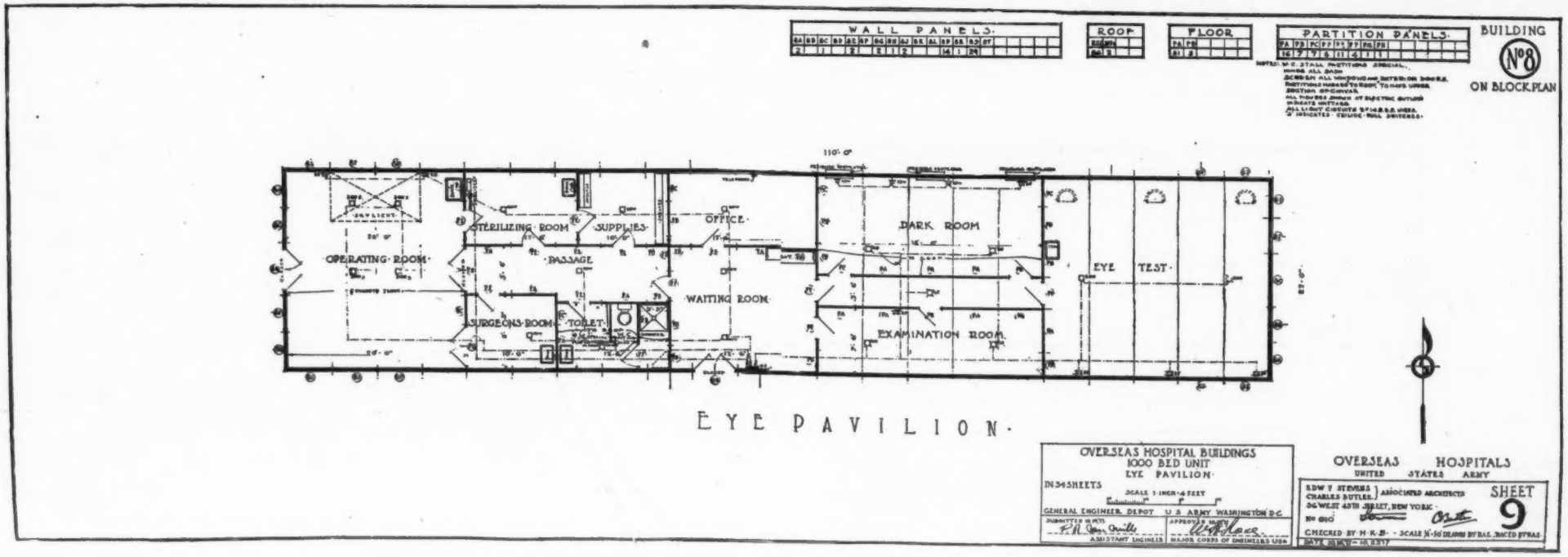


AN AMERICAN WAR HOSPITAL.—MESSRS. E. F. STEVENS AND CHARLES BUTLER, ASSOCIATED ARCHITECTS.

REPRODUCED FROM "THE ARCHITECTURAL RECORD" NEW YORK.

THE BUILDER, APRIL 12, 1918.

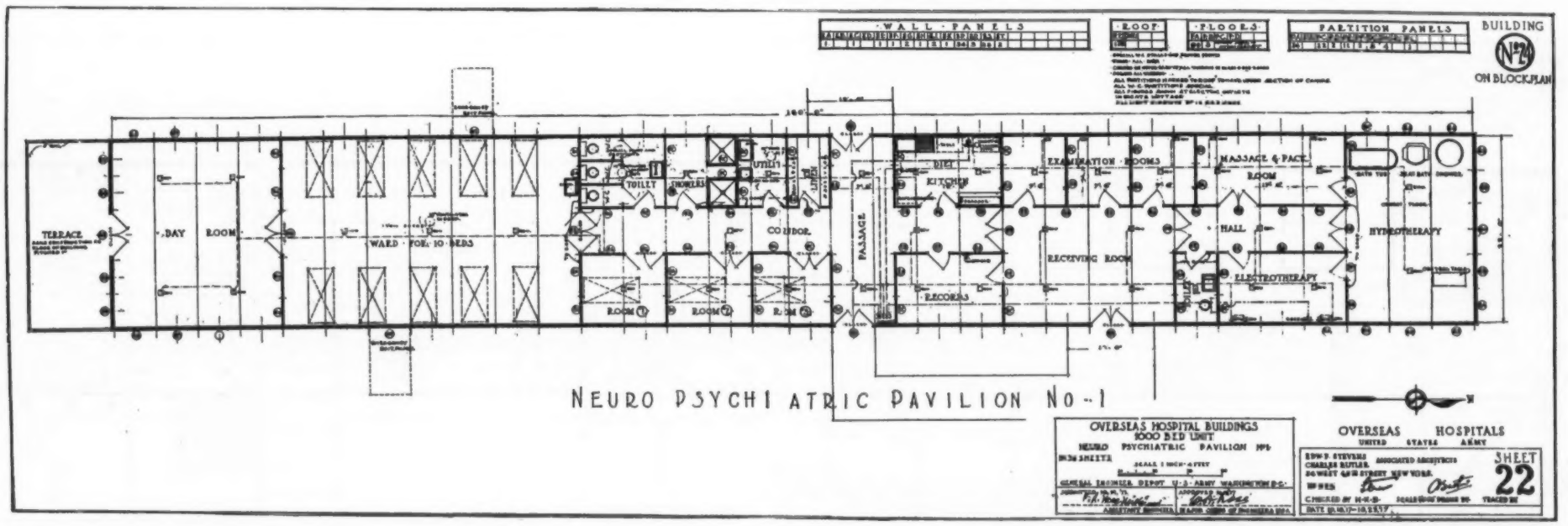


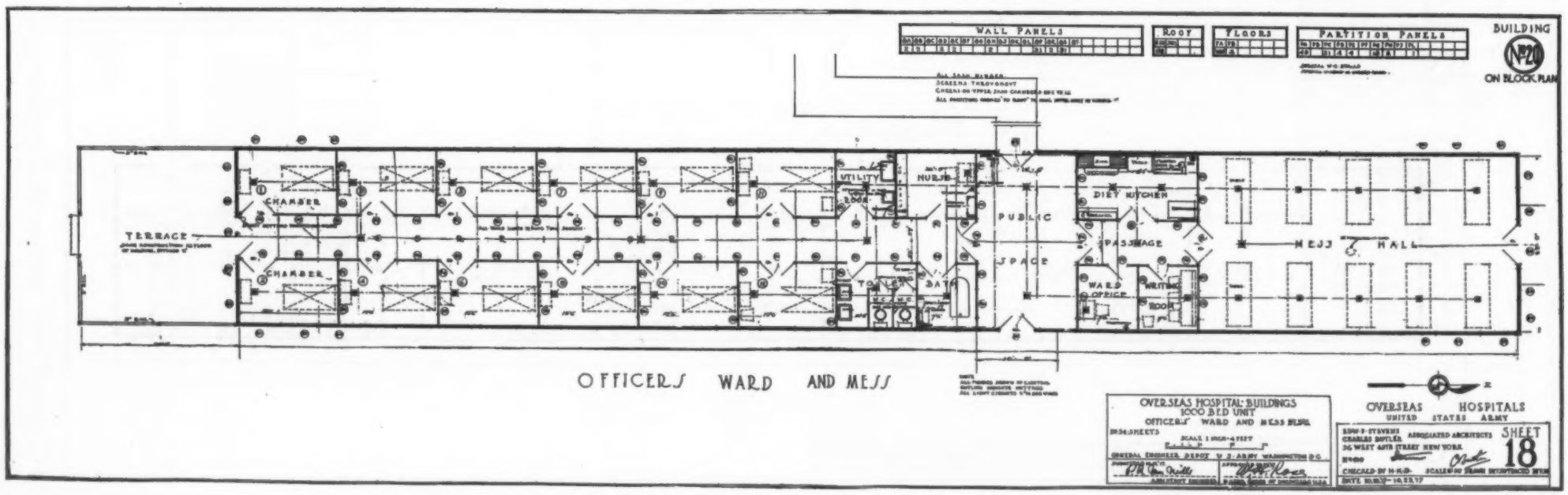


AN AMERICAN WAR HOSPITAL.—Messrs. E. F. Stevens and Charles Butler, Associated Architects.

Reproduced from "The Architectural Record" New York.

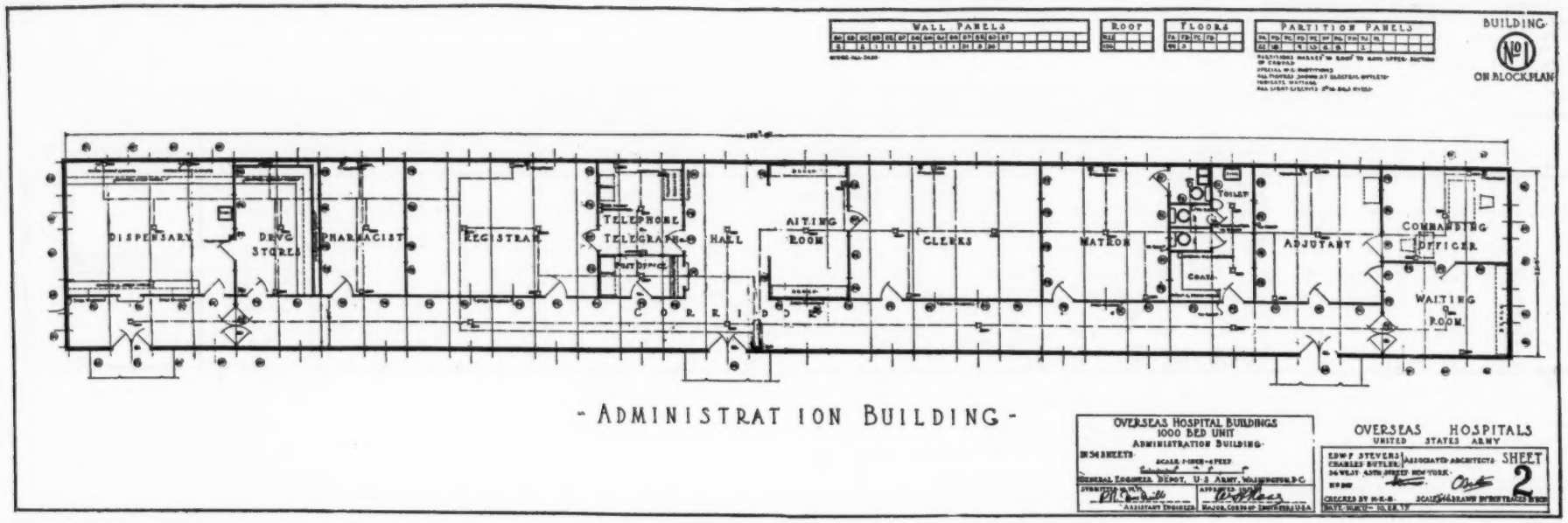
THE BUILDER, APRIL 12, 1918.



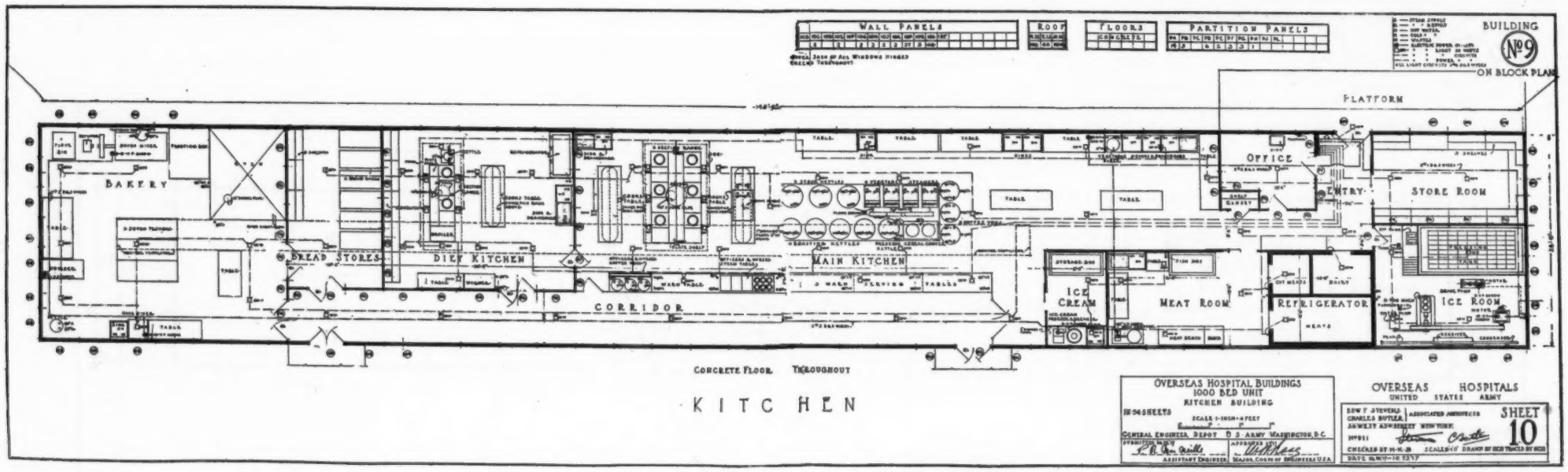


AN AMERICAN WAR HOSPITAL.—MESSRS. E. F. STEVENS AND CHARLES BUTLER, ASSOCIATED ARCHITECTS.

REPRODUCED FROM "THE ARCHITECTURAL RECORD" NEW YORK.



- ADMINISTRAT ION BUILDING -

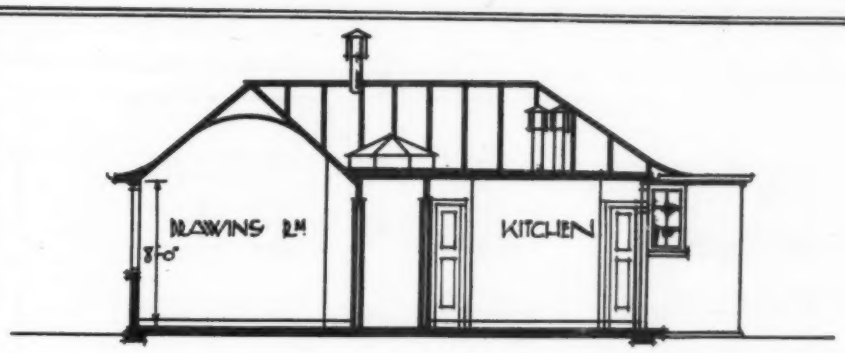


KITC HEN

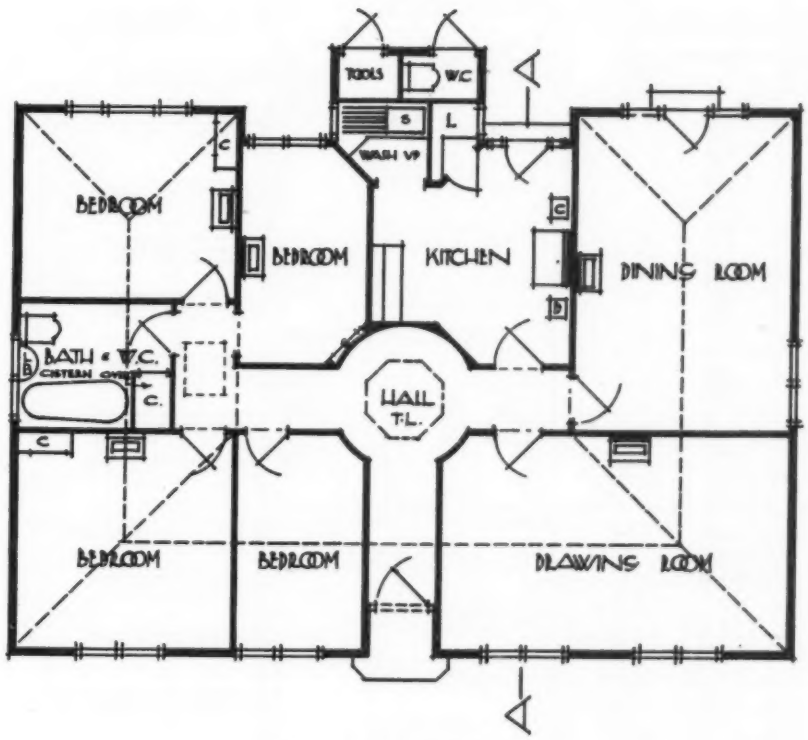
AN AMERICAN WAR HOSPITAL.—MESSRS. E. F. STEVENS AND CHARLES BUTLER, ASSOCIATED ARCHITECTS.

REPRODUCED FROM "THE ARCHITECTURAL RECORD" NEW YORK.

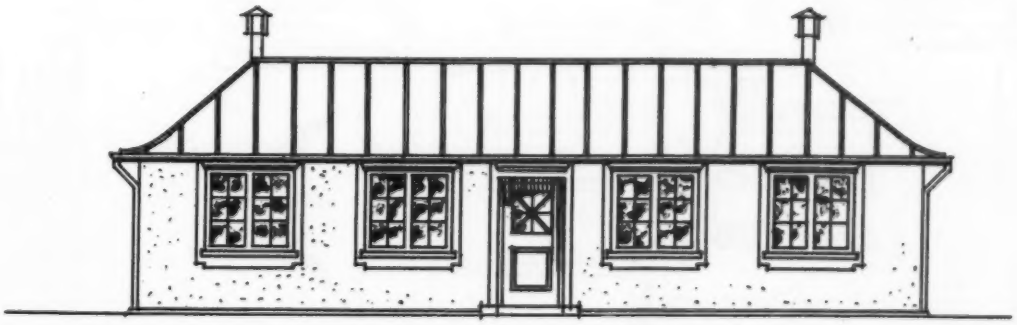
THE BUILDER, APRIL 12, 1918.



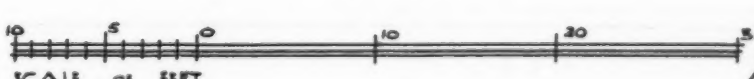
SECTION A–A



PLAN

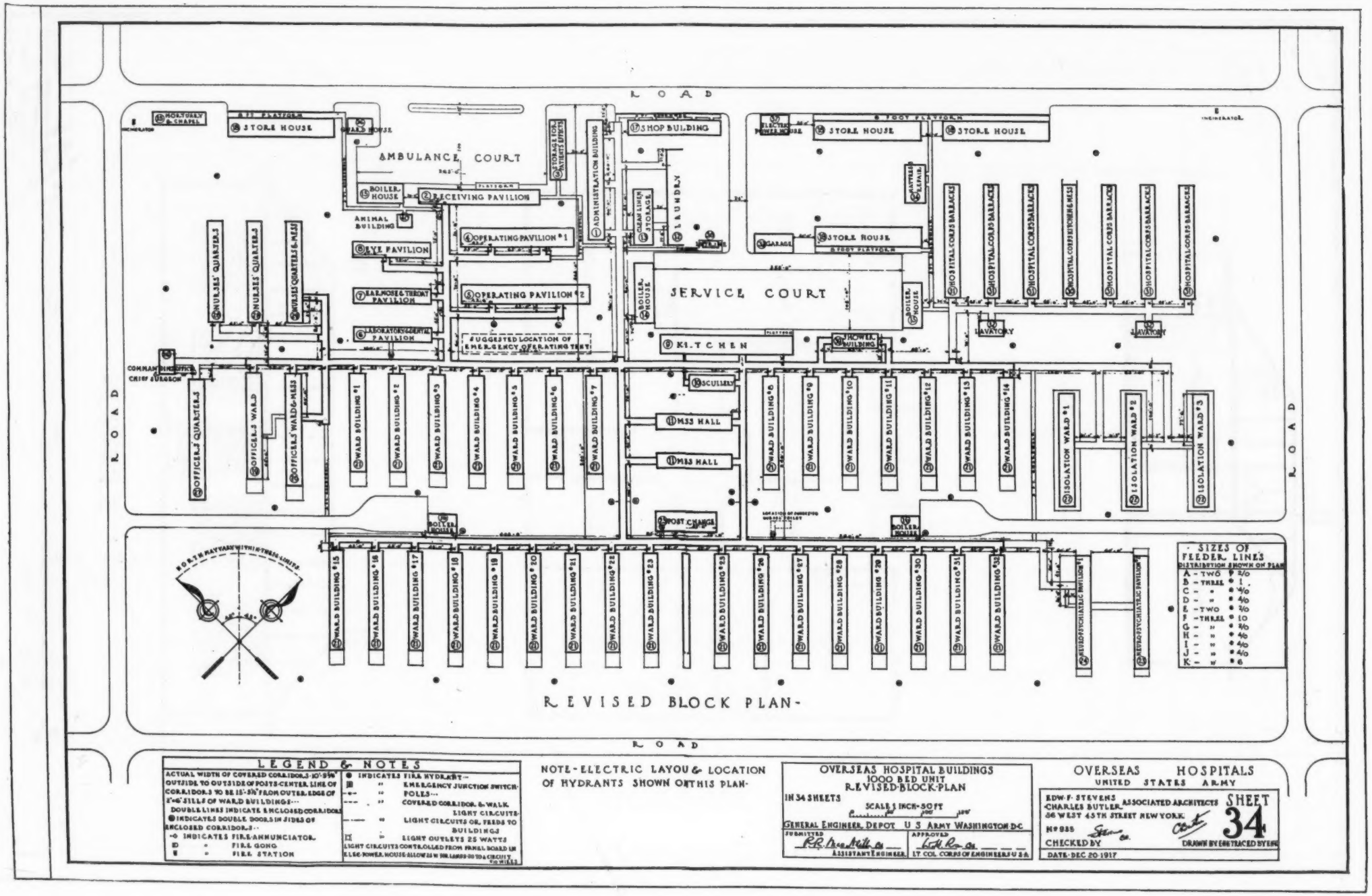


ELEVATION



Wm. Murray, F.R.I.B.A.
11 Suffolk Street,
Pall Mall, S.W.1.

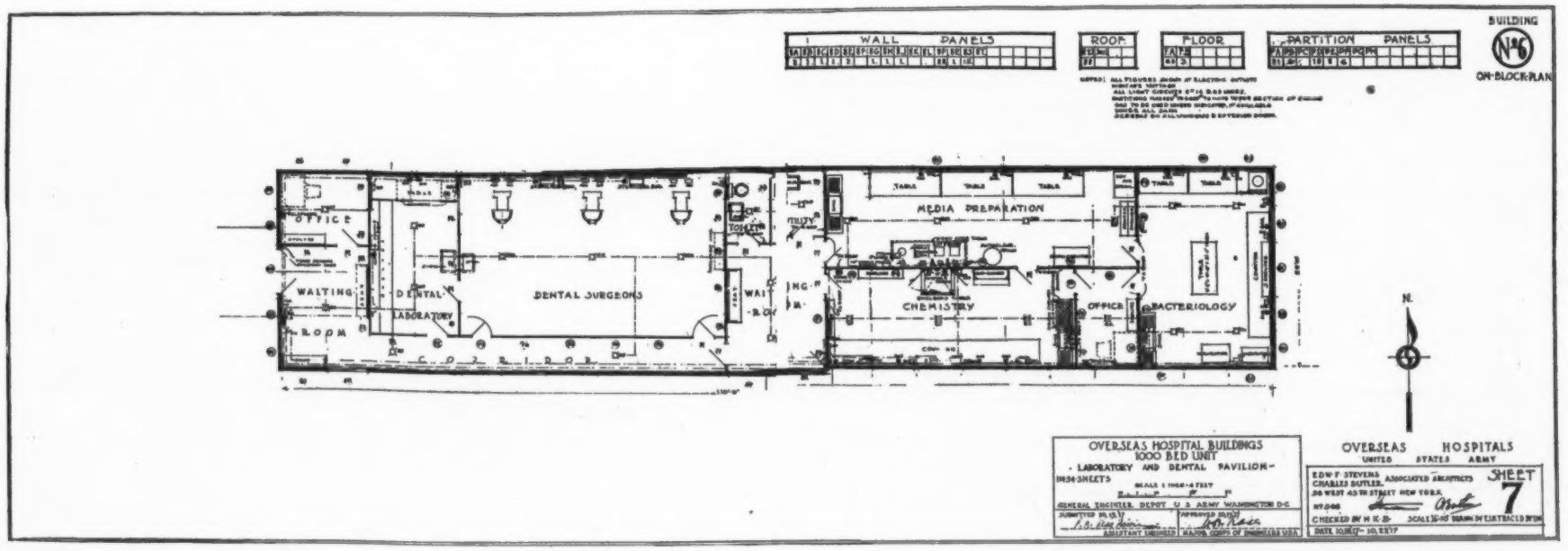
DESIGN FOR A BUNGALOW.—BY MR. JOHN MURRAY, F.R.I.B.A.

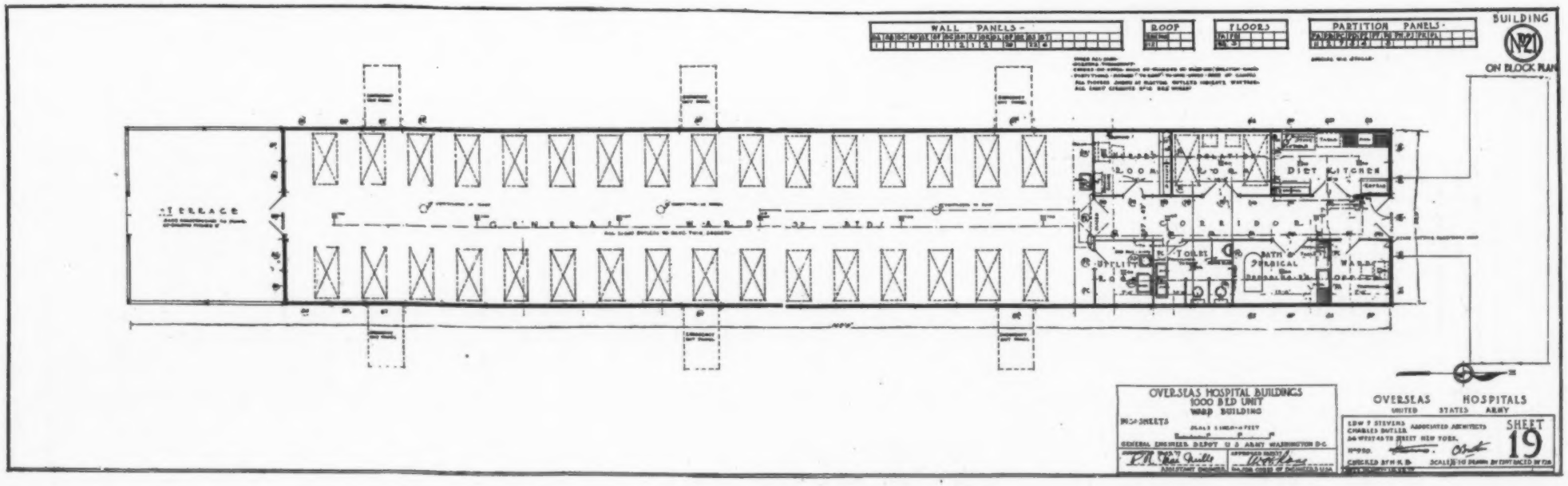


AN AMERICAN WAR HOSPITAL.—MESSRS. E. F. STEVENS AND CHARLES BUTLER, ASSOCIATED ARCHITECTS.

REPRODUCED FROM "THE ARCHITECTURAL RECORD" NEW YORK.

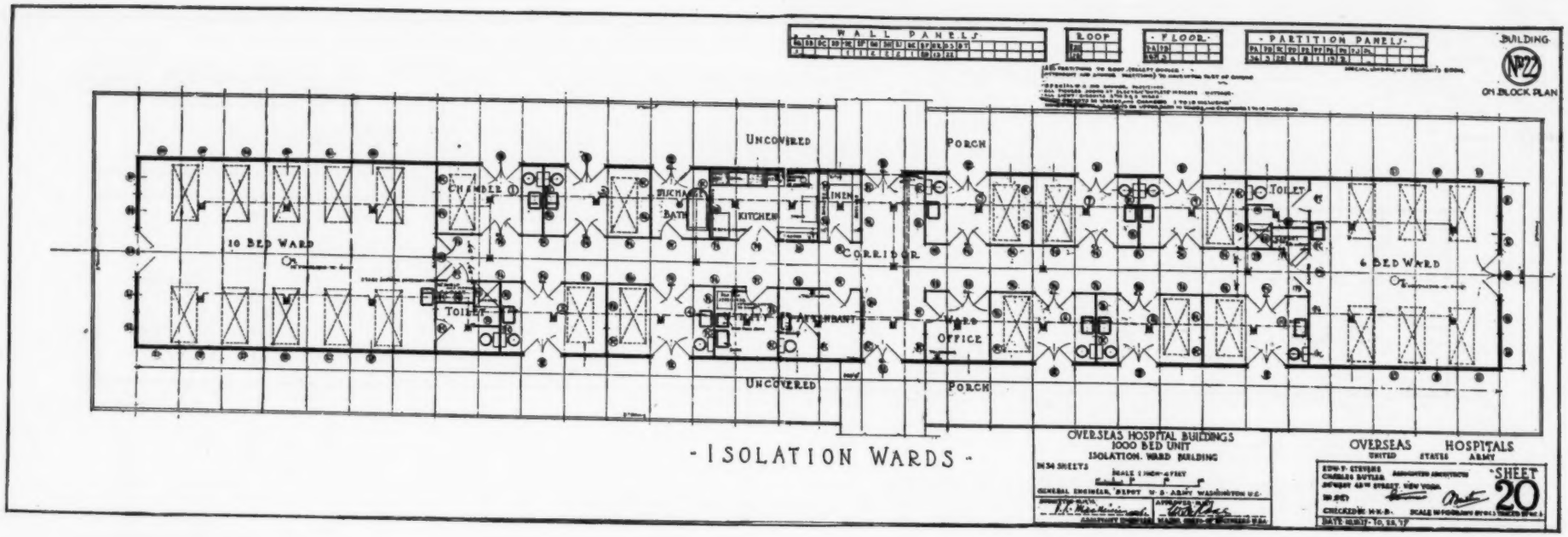
THE BUILDER. APRIL 12. 1918.



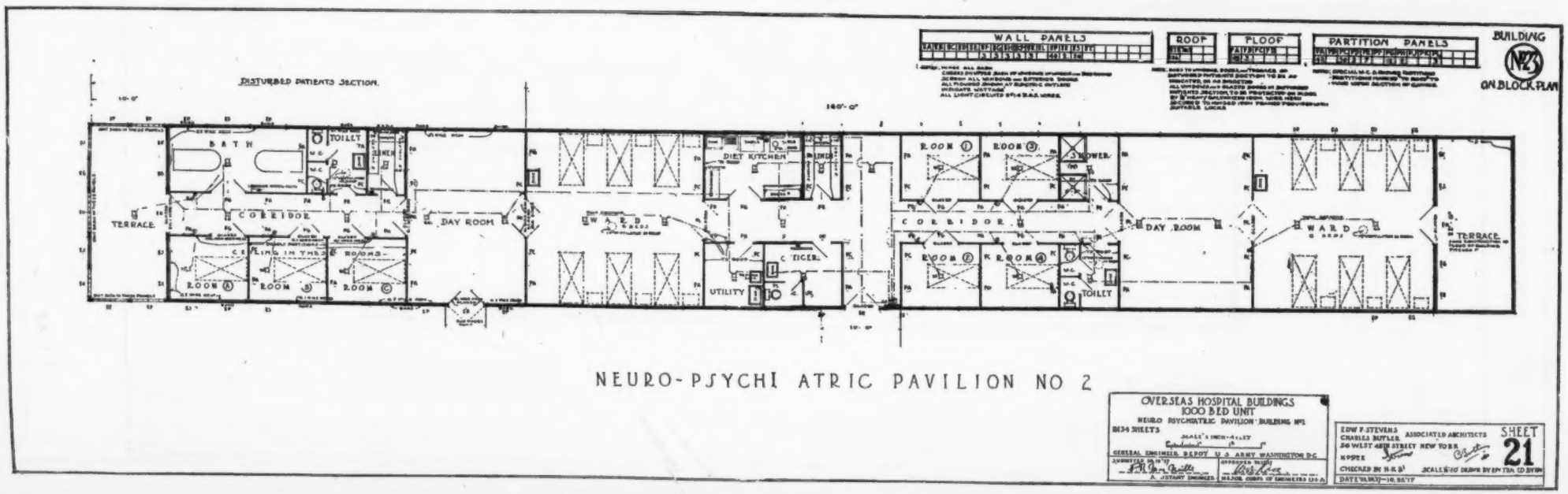


AN AMERICAN WAR HOSPITAL.—MESSRS. E. F. STEVENS AND CHARLES BUTLER, ASSOCIATED ARCHITECTS.

REPRODUCED FROM "THE ARCHITECTURAL RECORD" NEW YORK.



- ISOLATION WARDS -



NEURO-PSYCHI ATRIC PAVILION NO 2

AN AMERICAN WAR HOSPITAL.—Messrs. E. F. Stevens and Charles Butler, Associated Architects.

Reproduced from "The Architectural Record" New York.

RESIDENCE WITH ROOF-TERRACE, MESSRS. E. V. STEVENS AND CHARLES BUTLER, ASSOCIATED ARCHITECTS.

REPRODUCED FROM "THE ARCHITECTURAL RECORD" NEW YORK.